

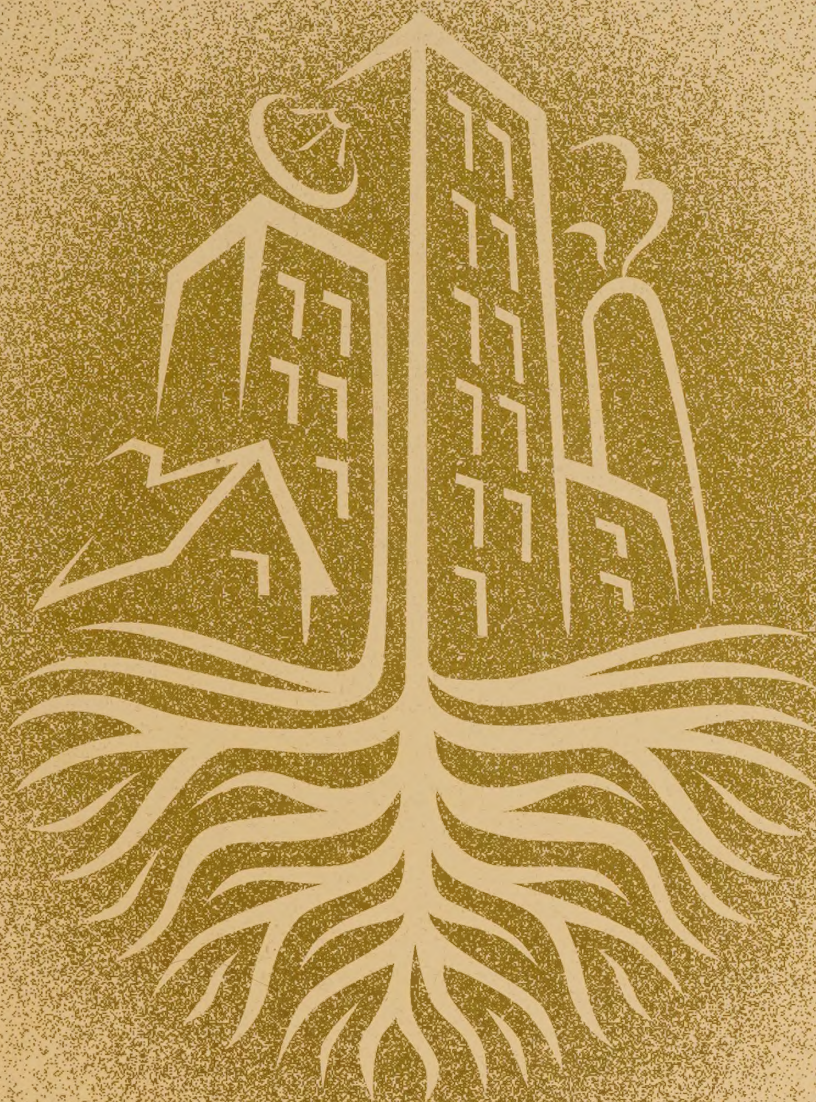


# Econnections

Linking the Environment and the Economy

16-200

Indicators and  
Detailed Statistics 2000



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# Econnections

**Linking the Environment and the Economy**

Indicators and  
Detailed Statistics 2000

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..	figures not available
...	figures not appropriate or not applicable
-	nil or zero
- -	amount too small to be expressed
e	estimate
p	preliminary figures
r	revised figures
x	confidential to meet secrecy requirements of the <i>Statistics Act</i>
n.e.c.	not elsewhere classified





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## Preface

*Econnections: Linking the Environment and the Economy—Indicators and Detailed Statistics* is an information system that has been designed specifically to integrate environmental and economic statistics. This has been achieved in several ways.

- Statistics Canada's principal economic statistical framework, the *Canadian System of National Accounts*, has been extended to include new measures of the environment's contribution to economic activity and of the economy's effects on the environment.
- Existing Statistics Canada economic data have been disaggregated and reorganized to make explicit environmental information that has always been collected, but that has not always been easily accessible.
- Various environmental data sets collected by other federal and provincial government departments have been integrated with Statistics Canada's economic statistics to allow fuller analysis of the relationship between economic activity and the environment.

The approach taken to presenting the information that makes up this system is two-pronged.

**Summary indicators** (presented in print and electronic form) are used to convey clear and concise information on specific environment–economy variables. Five themes are used to organize the 10 indicators<sup>1</sup> into groups:

- natural resource stocks;
- use of land resources;
- consumption of materials and energy;
- waste production; and
- environmental protection expenditures.

Recognizing that summary indicators cannot tell the full story, the second prong in the *Econnections* information system is a CD-ROM database containing the **detailed statistics** that lie behind the indicators. This database allows users the opportunity to delve much more deeply into the information in search of answers to questions beyond those to which the summary indicators respond.

1. New indicators and statistics will be added as our understanding of the interaction between the economy and the environment, and our ability to measure this interaction, grow.

## The Canadian System of Environmental and Resource Accounts

The *Econnections* information system relies on a set of underlying organizing principles and statistical methods. These principles and methods are defined by the *Canadian System of Environmental and Resource Accounts* (CSERA).

The CSERA has been developed with the specific objective of organizing physical and monetary statistics related to the environment using classifications, concepts and methods that are compatible with the *Canadian System of National Accounts*. The latter is the source of many of Statistics Canada's most important economic statistics. Compatibility between these two systems ensures that the environmental statistics of the *Econnections* system can be directly integrated with those of the *Canadian System of National Accounts*.

Those users wishing to delve more deeply into the details of the CSERA and its relationship with the *Econnections* indicators and statistics are directed to *Concepts, Sources and Methods of the Canadian System of Environmental and Resource Accounts* (Statistics Canada, 1997).<sup>2</sup>

## Other Environmental Indicator Series

It is important to note that the indicators presented in *Econnections* form just one of a growing number of environmental indicator series available from the Government of Canada. Many of the indicators on offer from other federal departments complement those presented here. Users are encouraged to consult these other indicator series in order to have the most complete understanding possible of the state of Canada's environment and the factors affecting it.

One of these other indicator series deserving particular mention here; this is the *National Environmental Indicator Series* produced by Environment Canada. The twelve indicators currently available in the *National Environmental Indicator Series* cover many of the same issues as *Econnections* (climate change, energy use and water use for example). The approaches taken in the two indicator series are complementary, rather than duplicative, however. Whereas the *Econnections* indicators focus on the integration of environmental and economic statistics to provide insight into environmental issues, the *National Environmental Indicators Series* is focused more closely on the state of the environment itself. For example, on the issue of climate change, *Econnections* offers an indicator of the contribution of household expenditures to greenhouse gas emissions. The *National Environmental Indicators Series*, in contrast, presents an indicator showing total Canadian carbon dioxide emissions along with the atmospheric

2. An electronic version of this guidebook has been included on the CD-ROM component of *Indicators and Detailed Statistics 2000*. A printed version of the guidebook is also available; for ordering information, see the back of this publication.





concentrations of key greenhouse gases. Taken together, these two indicators present a much more complete perspective on climate change than either of them would in isolation.

So that users of the *Econnections* system will be aware when an indicator within the *National Environmental Indicator Series* covers a theme closely related to that covered by an *Econnections* indicator, the discussion of the indicator in this volume will include a pointer to the relevant *National Environmental Indicator Series* indicator.<sup>1</sup>

## About the *Econnections* Name and Logo

The title under which this volume is released, *Econnections: Linking the Environment and the Economy*, has been coined to capture the essence of the system; that is, the linkage of the environment and the economy through integrated statistics. The name *Econnections* is intended to convey the notion that the economy is physically connected to the environment, that the environment is the foundation upon which the economy rests. The logo that appears on the cover of this publication is intended also to convey this connection. It portrays the economy in its various facets, symbolized by homes, offices and factories, as inextricably bound to the environment, symbolized by the roots of a tree.

## Organization of this Volume

The first part of this volume examines the main trends in the indicators and, where relevant, the major factors lying behind those trends. The second section provides a technical supplement for each of the 10 indicators to aid the user in their interpretation. Detailed statistics that lie behind the indicators are presented at the end of the volume.

## Acknowledgements

The 2000 edition of *Indicators and Detailed Statistics* has been prepared by the Environmental Accounts and Statistics Division under the direction of Claude Simard (Director) and Robert Smith (Assistant Director). Martin Lemire served as editor and project manager. Hélène Trépanier was the publication's technical editor. Major contributions to the statistics and analysis presented in the report have been made by:

Robert Smith  
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1. Users interested in viewing the entire *National Environmental Indicator Series* are invited to visit Environment Canada's web site at <http://www.ec.gc.ca/soer-ree/>.





## How to Use this System

*Econnections: Linking the Environment and the Economy—Indicators and Detailed Statistics 2000* is a two-component information system. The first component is a printed publication containing two-page analysis of each of the 10 indicators currently available in the system. A set of detailed statistical tables that lie behind the indicators is also included. This publication is intended to provide users with quick access to the indicators in a format that is convenient and easy to read.

The system's second component is a CD-ROM containing:

- a reproduction of the indicators publication in Adobe Acrobat format;
- a database of detailed statistical tables supporting the indicators and accessible through Microsoft Excel, Microsoft Excel Viewer (included on the CD-ROM), or other spreadsheet software packages (for example, Lotus and QuattroPro);
- an Adobe Acrobat reproduction of *Concepts, Sources and Methods of the Canadian System of Environmental and Resource Accounts* (Statistics Canada, 1997), the guidebook to the accounting framework that underlies the *Econnections* indicators and statistics.

The CD-ROM is found in the plastic pouch attached to the inside back cover of the indicators publication. Complete instructions for the computer installation of the system are also found there.

## Indicators and Statistics Linked Electronically

To aid users in locating the statistical tables related to a particular indicator, electronic links have been established between Adobe Acrobat and Excel (or Excel Viewer).

Each indicator in the Adobe Acrobat version contains a "hot button" that can be clicked with your mouse to open a list of tables containing the data associated with that indicator. Simply by clicking on the table that one is most interested in, Excel (or Excel Viewer) will be launched automatically with that particular table open for viewing.

Users can also access directly the statistical tables using Excel, Excel Viewer or other spreadsheet software packages.

## How to Get Help

**Technical assistance:** In the event that difficulties are experienced when installing or using this product, technical assistance may be obtained at no charge by dialing the **Electronic Products Helpline** at **1-800-949-9491**. Users in the National Capital Region are requested to call **(613) 951-5252**.

**Subject-matter assistance:** Users with questions regarding the content of either the **indicators** or the **detailed statistics** that are presented in the *Econnections* system are requested to call **(613) 951-0297**.







# *Indicators*



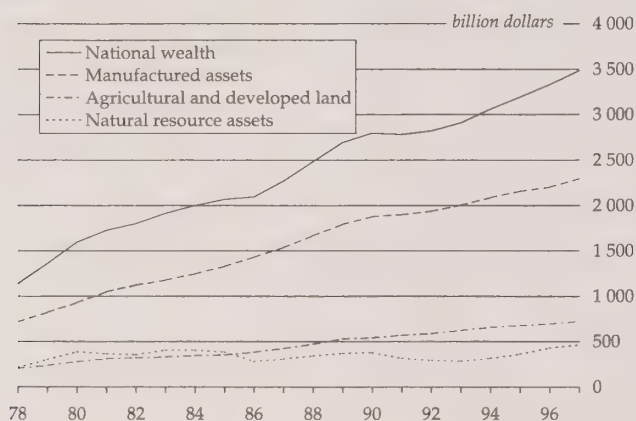


# 1 Natural Resource Wealth

*Natural Resource Wealth* measures the contribution of Canada's natural resources stocks—timber, energy<sup>1</sup> and minerals<sup>2</sup>—to national wealth at the end of each year. Annual estimates of the market value of these resource stocks are made and compared with the other assets that comprise national wealth.<sup>3</sup> Not all stocks of timber, energy and mineral resources are measured however. In the case of energy and minerals, only the portion of Canada's total stock that is known to exist with a high degree of certainty and that can be profitably extracted today is valued. In the case of timber stocks, the portion of the forest that is valued is that which is accessible for harvesting, where commercially valuable species grow to a marketable size within a reasonable length of time, and where harvesting is allowed.<sup>4</sup>

The monetary value of natural resource stocks serves as an indicator of the contribution of resources to our national wealth (Figure 1a). Wealth, in turn, is an important indicator of economic well-being, as it represents the potential for future income. The combination of natural resource wealth with the wealth represented by manufactured assets and agricultural and developed land allows us to assess whether total national wealth is maintained over time. In other words, it tells us whether our current level of national income can be sustained.

Figure 1a  
Natural Resource Assets and National Wealth, 1978-1997

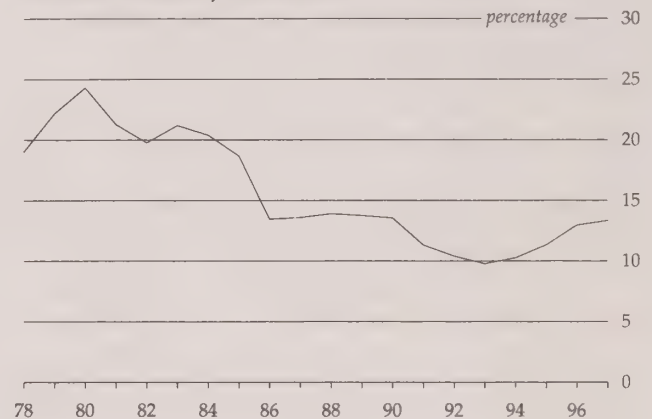


Source:  
Statistics Canada, Environment Accounts and Statistics Division.

1. Crude oil, natural gas, crude bitumen (tar sands) and coal.
2. Potash, copper, gold, iron, lead, molybdenum, nickel, silver, uranium and zinc.
3. Note that the estimates of natural resource wealth measure the value of the resources only and not the value of the manufactured assets used in resource extraction or processing.
4. These more limited timber, energy and mineral stocks, referred to here as natural resource assets, are the same stocks measured in physical terms in the indicator of *Physical Quantities of Natural Resource Assets*. The estimates presented in the two indicators are therefore comparable.

A broad, but not comprehensive, measure of natural resource wealth comprising energy, mineral and timber resources represented more than 13% of total national wealth in 1997 (Figure 1b). In the late 1970s and early 1980s, these resources represented more than 20% of total wealth. The major reason for the decline in the relative importance of natural resources was changes in energy resource assets.

Figure 1b  
Natural Resource Wealth as a Share of Total National Wealth, 1978-1997



Source:  
Statistics Canada, Environment Accounts and Statistics Division.

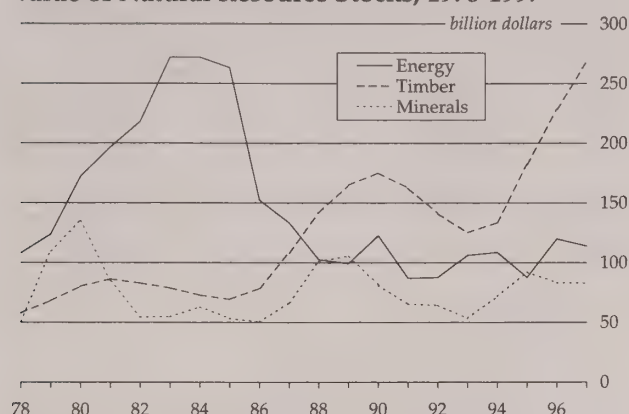
The value of energy resource assets peaked at \$272 billion in 1983 (Figure 1c), when they alone accounted for 14% of national wealth. By 1997, these assets were worth less than half of their peak value and represented only 3% of total wealth. The change in their value reflected the significant decline in world energy prices after 1986 more than it did declines in physical quantities of energy resource assets.<sup>5</sup> Since the value of resource assets depends on extraction costs as well as selling prices, the increased exploration costs associated with increasingly hard-to-find energy resources also contributed to the decrease in value. Technological development tended to reduce exploration and extraction costs over the period however, making exploitation of previously uneconomic resources feasible, and reducing the downward effect of energy prices on declining energy resource wealth.

5. See the indicator of *Physical Quantities of Natural Resource Assets* for a discussion of the physical changes in resource assets.





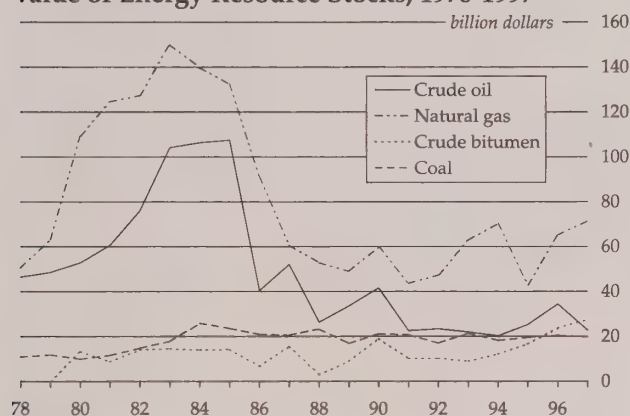
Figure 1c  
Value of Natural Resource Stocks, 1978-1997



Source:  
Statistics Canada, Environment Accounts and Statistics Division.

The most striking change in energy resources since 1978 occurred for crude bitumen (tar sands) (Figure 1d). In 1978, when this industry was still young, crude bitumen assets had a zero value. Production at the time was very low and start-up costs were very high, resulting in negative rents in early years. By 1997, the value of crude bitumen assets had surpassed, for the first time, that of conventional crude oil.

Figure 1d  
Value of Energy Resource Stocks, 1978-1997



Source:  
Statistics Canada, Environment Accounts and Statistics Division.

The value of mineral resource assets peaked in 1980 at \$135 billion (Figure 1c), when they accounted for 8% of total wealth. In 1997, their value (\$83 billion) represented 2% of national wealth. The changes in value of mineral assets closely followed the ups and downs of the economy, with declines in the early 1980s and early 1990s when the economy was in recession. The decrease in mineral stock values corresponded to some extent with changes in the physical quantity of assets. With the exception of gold, stocks of most metal assets have declined by 30% to 70% in physical terms since 1978.

The value of timber assets rose to a peak of \$268 billion, or close to 8% of national wealth, in 1997 (Figure 1c). Between 1994 and 1997, the value of timber assets has doubled, reflecting increased prices for wood and paper products in 1995 and 1996. Before that period, timber stock values, as with minerals, closely followed the pattern of economic activity, with declines corresponding to the recessions in the early 1980s and 1990s.

#### Related indicators:

*Physical Quantities of Natural Resource Assets*

*Total Resource Base*





## 2 Physical Quantities of Natural Resource Assets

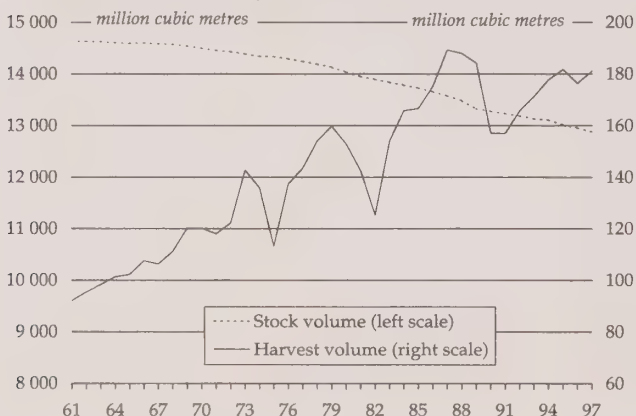
*Physical Quantities of Natural Resource Assets* measures the size of Canada's stocks of timber, energy<sup>1</sup> and mineral resources<sup>2</sup> at the end of each year. Free of fluctuations due to price changes, physical estimates of resource asset stocks portray the actual quantities of natural resources that Canada has at its disposal in the short term.

The interpretation of physical stock estimates differs for renewable and non-renewable resources. For renewable resources, a constant stock size indicates that annual harvesting and other losses are offset by annual growth. For non-renewable resources, a constant size means that additions to the asset stock through new discoveries offset depletion of existing assets. Additionally, the current annual depletion rate of non-renewable resources can be compared to the asset stock size to provide a measure of asset life, or the number of years it will take to deplete the remaining stock.

### Timber asset stocks

Over the period 1961 to 1997, timber asset stocks declined by 12% in volume terms (Figure 2a). This result is expected given the evolution of the land used for timber production in Canada in recent decades. This land could be described as being in transition from virgin forest made up of mainly mature, high-volume trees to a "production" forest containing a higher percentage of younger trees of lower volume.

Figure 2a  
Timber Asset Stocks, 1961-1997



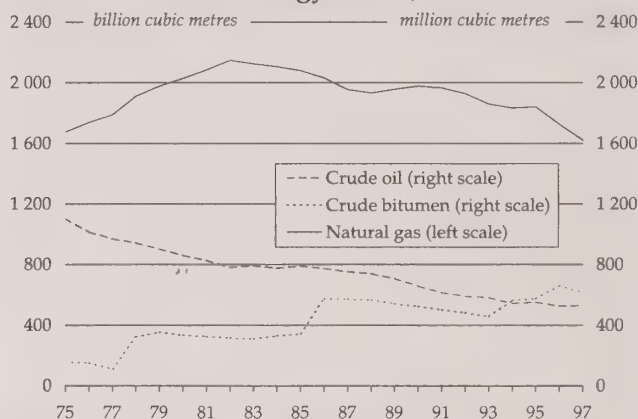
Source:  
Statistics Canada, Environment Accounts and Statistics Division.

Total annual timber harvest increased substantially in recent decades, nearly doubling from 92 million cubic metres in 1961 to 181 million cubic metres in 1997. Two factors suggest that this rate of increase may be difficult to maintain in the future. First, timber was already harvested on more than half of Canada's long-term timber resource base in the mid-1990s (see figure 3a of *Total Resource Base* indicator). Second, much of the timber harvested in the last 40 years came from high-volume, first-growth forests. These are being replaced by "production" forests in which trees are harvested at an earlier age and lower volume.<sup>3</sup>

### Energy asset stocks

Conventional crude oil asset stocks declined by more than half between 1975 and 1997 (Figure 2b). The drop in asset stocks is generally attributable to a declining rate of stock additions rather than to an increasing rate of depletion. Since 1994 however, higher rate of stock additions compensated for depletion. As a result of the stock decline, crude oil asset life fell from 14 years in 1975 to 7 years in 1997 (Figure 2c).

Figure 2b  
Stocks of Selected Energy Assets, 1975-1997



Source:  
Statistics Canada, Environment Accounts and Statistics Division.

In contrast to crude oil, crude bitumen asset stocks increased in size by almost four times over the period 1975 to 1997 period, surpassing the level of crude oil in 1994. Despite this increase, asset life for crude bitumen declined, reflecting rapid growth in extraction rates. As for natural gas, asset stocks increased over the period 1975 to 1982, after which they gradually declined to the 1975 levels at the end of 1997. Natural gas asset life declined as well, again reflecting increased rates of extraction.<sup>4</sup>

1. Crude oil, natural gas, crude bitumen (tar sands) and coal.

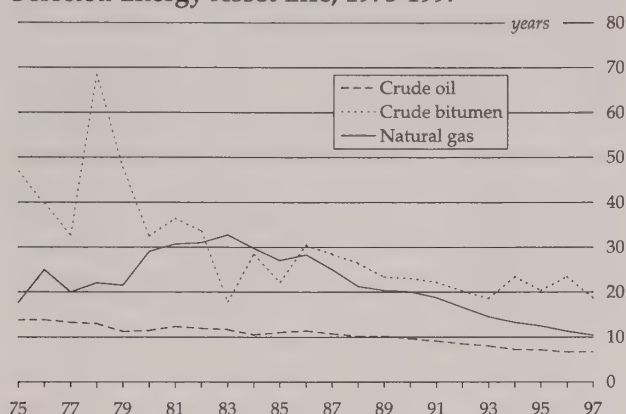
2. Potash, copper, gold, iron, lead, molybdenum, nickel, silver, uranium and zinc.

3. Forest management techniques designed to increase the number of trees per hectare in production forests can offset the effect of harvesting trees of lower volume.

4. Asset size for coal (not shown in figures 2b and 2c) more than doubled during the period 1976 to 1997. However, asset life declined because of increased rates of extraction.



Figure 2c  
Selected Energy Asset Life, 1975-1997



Source:  
Statistics Canada, Environment Accounts and Statistics Division.

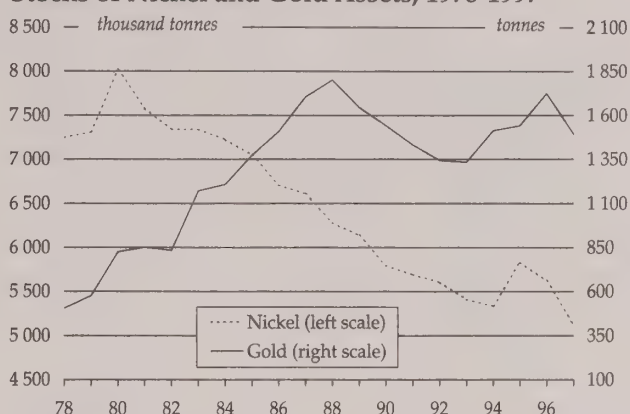
It is worth noting that physical changes in energy asset stocks have not always been reflected in changes in their value. Both crude oil and natural gas experienced dramatic increases in value in the late 1970s and early 1980s as a result of rising energy prices.<sup>1</sup> At the same time, the physical stock of crude oil assets actually declined; natural gas assets did grow in size, but much less so than in value. In the case of crude bitumen, both the asset size and its value slightly increased over the same period.

#### Mineral asset stocks

Trends in asset stock size for nickel and gold are shown in Figure 2d. Nickel asset stocks fell by 29% between 1978 and 1997, forcing asset life for this metal from 56 to 28 years. This downward trend in nickel reserves can be largely attributed to high levels of extraction and low nickel prices during the period (Figure 2e). After the 1981 recession, nickel prices continued to weaken until 1986 because of slackening demand (Kuck, 1999). Nickel prices declined again each year after the 1988 peak, mainly because of increasing nickel shipments by the Soviet Union to the West, and increasing world production of primary nickel (Kuck, 1999).

Both the size and value of gold resource assets rose considerably between 1978 and 1996. In 1997 however, gold prices on the world market went down 15%. The reasons were twofold—central banks of several countries sold large shares of gold holdings; and bank failures or insolvencies in East and Southeast Asian countries (Amey, 1999). The decline in gold price coincided with a drop of 13% in gold reserves in Canada. Asset life for gold remained stable at about 9 years during that period.

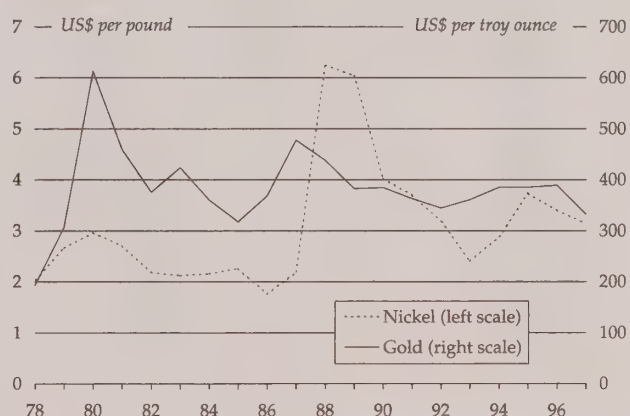
Figure 2d  
Stocks of Nickel and Gold Assets, 1978-1997



Source:  
Statistics Canada, Environment Accounts and Statistics Division.

Trends for all other base metals were similar to those for nickel, with both asset size and life decreasing during the 1978 to 1997 period. As with energy assets, there was a considerable divergence between the size and value of base metal assets; the value of these assets typically rose over the period while asset size fell.

Figure 2e  
Annual Average Price for Nickel and Gold, 1978-1997



Sources:  
Kuck, 1999; Amey 1999.

#### Related indicators:

*Natural Resource Wealth*

*Total Resource Base*

1. See the indicator *Natural Resource Wealth* indicator for a complete discussion of the trends in natural resource values.





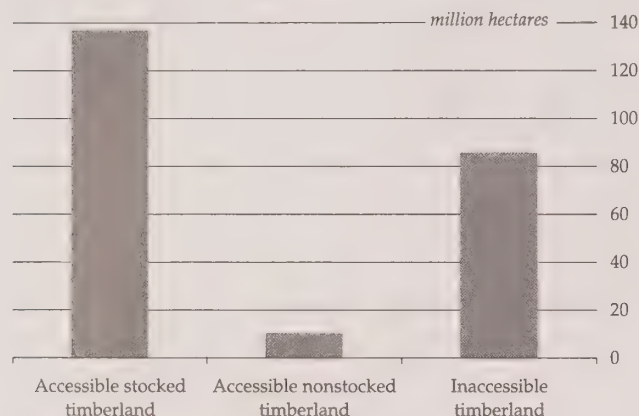
### 3 Total Resource Base

*Total Resource Base* compares the portions of Canada's timber, fossil fuel and selected metal resources that are currently viable (that is, are economic assets) with estimates of the total resource base that may be viable in the future. For timber, the total resource base is the area of land that is suitable for timber production and where the harvesting of timber is allowed. For other resources, the total resource base is the estimated quantity that will ultimately prove exploitable with the technology and infrastructure currently available or likely to be developed in the future.

#### Timber resource, 1994

Canada's estimated total timber resource base in 1994 was 233.5 million hectares. This was the forest area that was considered capable of producing commercially valuable timber in a reasonable period of time and on which harvesting was allowed. Of this area, 137.1 million hectares were stocked with trees that were accessible for harvesting. Another 10.5 million hectares were accessible but not stocked with trees. Inaccessible timberland represented the remainder (85.9 million hectares) of the total timber base (Figure 3a).

Figure 3a  
Timber Resource Base, 1994



Source:  
Canadian Council of Forest Ministers, 1999.

Canada's short-term timber resource base can be taken as the 137.1 million hectares of stocked timberland that were accessible for timber production in 1994. The full 233.5 million hectares of timberland on which harvesting was commercially viable and permitted can be taken to represent our long-term timber resource base. The 137.1 million hectares available for timber harvesting thus represented 59% of the long-term base. This figure may be an underestimate however, as some of the land that is classified as accessible is not necessarily commercially viable.<sup>1</sup> No allowance is made in this estimate for possible

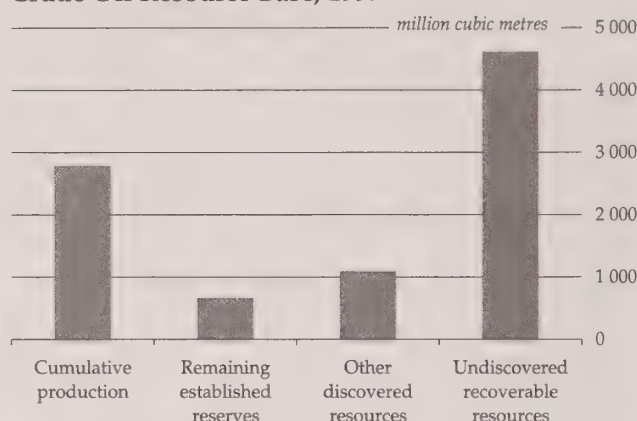
1. Timberland that is near a transportation corridor may be accessible, but it is not necessarily close enough to a market to be commercially viable.

decreases in the resource base if further land is protected from logging.

#### Fossil fuel resources

The estimated total crude oil resource base at the end of 1997 was 9.2 billion cubic metres. Of this, cumulative production had consumed 2.8 billion cubic metres, while remaining established reserves represented another 666 million cubic metres. Other discovered resources represented a further 1.1 billion cubic metres. Undiscovered recoverable resources were thought to be on the order of 4.6 billion cubic metres, the majority of which (3.7 billion cubic metres) were situated in "frontier," or undeveloped, areas (Figure 3b).

Figure 3b  
Crude Oil Resource Base, 1997



Source:  
National Energy Board, 1999.

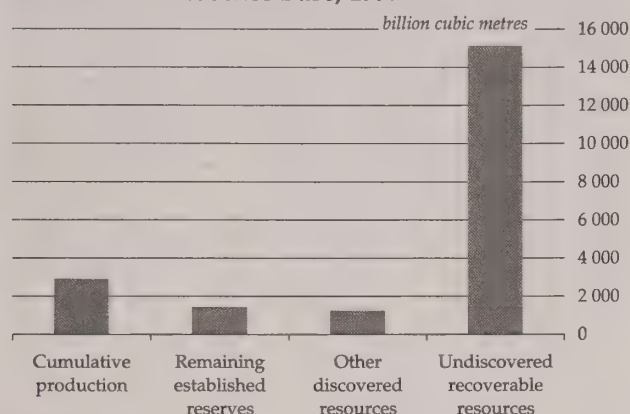
The estimated total natural gas resource base at the end of 1997 was 20.8 trillion cubic metres. Of this, cumulative production had consumed 2.9 trillion cubic metres and remaining established reserves represented another 1.4 trillion cubic metres. Other discovered resources, located in "frontier" basins such as the Beaufort Sea and the Grand Banks, made up 1.2 trillion cubic metres. Undiscovered recoverable resources were estimated to be 15.2 trillion cubic metres, of which 7.5 trillion cubic metres were thought to remain in areas of traditional natural gas exploration (mainly western Canada) and 7.6 trillion cubic metres in "frontier" basins (Figure 3c).

The estimated total crude bitumen resource base at the end of 1997 was a very substantial 49 billion cubic metres.<sup>2</sup> Cumulative production had used just 407 million cubic metres, or less than 1%, of this. Remaining established reserves represented another 614 million cubic metres; other discovered resources made up the rest of the estimated total resource base. No estimate was made for undiscovered recoverable resources, as they were expected

2. Since the total crude bitumen resource base is so large in comparison to cumulative production and remaining established reserves, the figures are not presented in graphical form here.



Figure 3c  
Natural Gas Resource Base, 1997



Source:  
National Energy Board, 1999.

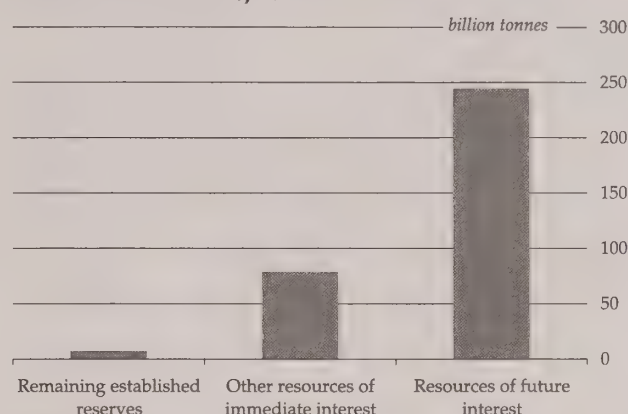
to be insignificant relative to the size of the discovered resource (National Energy Board, 1999).

Finally, the total coal resource base was estimated to be 331 billion tonnes at the end of 1985 (the most recent year for which estimates are available). Of this, 7.3 billion tonnes were remaining established reserves and 78.9 billion tonnes were other resources of immediate interest. These are the coal resources that because of a combination of thickness, quality, depth and location are attractive for further exploration or early development. The remaining 244.8 billion tonnes were resources of future interest. These are resources contained in seams that, because of less favourable combinations of thickness, depth, quality and location, may only become exploitable in the foreseeable future with changes in economic factors and/or production techniques (Figure 3d). Data on cumulative production of coal resources are not currently available.

#### Non-ferrous metal resources

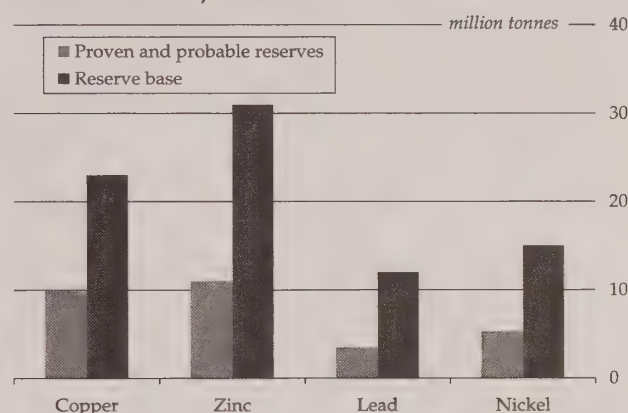
Estimates of the resource base for Canada's principal non-ferrous metals (copper, zinc, lead and nickel) are presented in Figure 3e. As can be seen, the reserve base is typically at least twice as large as the estimates of proven and probable reserves.

Figure 3d  
Coal Resource Base, 1985



Source:  
National Energy Board, 1999.

Figure 3e  
Proven and Probable Reserves and Reserve Base of Selected Metals, 1998



Sources:  
Reed, A., 1997; United States Geological Survey, 2000.

#### Related indicators:

*Natural Resource Wealth*

*Physical Quantities of Natural Resource Assets*





## 4 Agricultural Land Use and Supply

*Agricultural Land Use and Supply* measures the area of dependable agricultural land available in Canada and contrasts this area with the amount of land cultivated for crops (i.e. cropland and summerfallow). Dependable agricultural land is that considered to be free from severe constraints on crop production. It is represented by classes 1 through 3 of the *Canada Land Inventory* (Environment Canada, 1981). The indicator portrays the extent to which the supply of dependable agricultural land has diminished over time and points at the increasing use of marginal land.

Land cultivated for crops comprises about 4% or 41 million hectares of Canada's total land mass (Table 4a). Nearly 85% of this land is found in Manitoba, Saskatchewan and Alberta.

Table 4a  
Land Cultivated for Crops, 1996

Province	Land cultivated for crops		Total
	Cropland	Summerfallow	
	thousand hectares		
Newfoundland	7.2	0.1	7.3
Prince Edward Island	170.4	0.4	170.7
Nova Scotia	112.4	0.6	112.9
New Brunswick	135.0	0.4	135.4
Quebec	1 738.8	8.8	1 747.6
Ontario	3 544.9	19.6	3 564.6
Manitoba	4 699.1	323.7	5 022.8
Saskatchewan	14 398.7	4 431.5	18 830.1
Alberta	9 546.5	1 436.7	10 983.3
British Columbia	565.7	39.0	604.8
Total	34 918.7	6 260.7	41 179.5

Sources:  
Statistics Canada, Environment Accounts and Statistics Division; and  
Agriculture Division.

Map 4a  
Agricultural Land



Sources:  
Statistics Canada, Environment Accounts and Statistics Division; and  
Agriculture Division.

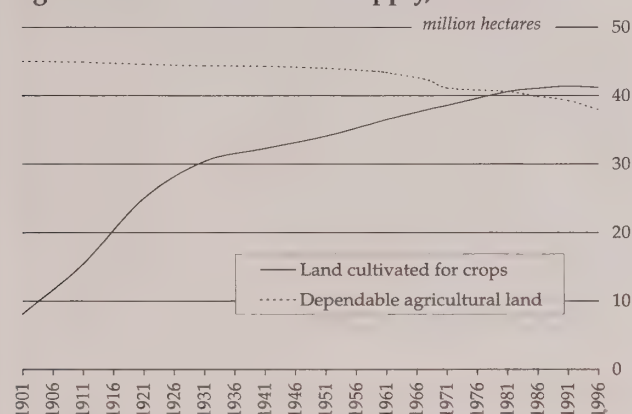


Due to soil, climate and other limitations, all agricultural activity does not occur on dependable agricultural land (Map 4a). In Canada, a total 68 million hectares of land or 7% of Canada's land mass, is used for a wide-range of agricultural activities (Statistics Canada, 2000). This agricultural land includes cropland, summerfallow, improved pasture, unimproved pasture, native pasture, rangeland, woodland, orchards and nurseries.

During the early 1980s, the amount of land cultivated for crops surpassed the supply of dependable agricultural land (Figure 4a). More specifically, between 1901 and 1996, the amount of land cultivated for crops increased five-fold while the supply of dependable agricultural land declined by 16%, as a result of the increased use of this land for urban and other non-agricultural purposes.

Figure 4a

### Agricultural Land Use and Supply, 1901-1996



Source:

Statistics Canada, Environment Accounts and Statistics Division.

Much of the loss of dependable agricultural land occurred around the urban centres of southern Ontario, an area that boasts more than half of Canada's Class 1 agricultural land<sup>1</sup> (Table 4b). Given that most of this land is located in close proximity to the major urban centres in Ontario, the continued expansion of these urban areas will lead to further losses of Class 1 agricultural land.

The irreversible conversion of dependable agricultural land has forced agricultural production onto marginal land. This is a concern, since marginal land suffers from constraints on crop growth and can be unreliable for stable, long-term agricultural production. Moreover, production on marginal land may be more environmentally harmful, as this land is often susceptible to soil damage resulting in erosion, and requires greater inputs of fertilizers, pesticides and water to achieve a given yield.

1. More than half of the *Canada Land Inventory* Class 1 land in Canada is found in southern Ontario. Class 1 land is the only land in the country with no significant constraints for crop production. See the indicator of *Urban Land Use* for a more detailed discussion of the loss of Class 1 land to urbanization.

Table 4b

### Canada Land Inventory: Dependable Agricultural Land

Province	Dependable agricultural land			Total
	Class 1	Class 2	Class 3	
	thousand hectares			
Newfoundland	-	-	1.8	1.8
Prince Edward Island	-	261.6	141.5	403.1
Nova Scotia	-	166.3	982.9	1 149.2
New Brunswick	-	160.5	1 151.1	1 311.7
Quebec	19.6	907.1	1 277.2	2 203.9
Ontario	2 156.8	2 217.7	2 908.8	7 283.2
Manitoba	162.5	2 530.6	2 440.7	5 133.8
Saskatchewan	999.7	5 874.4	9 424.7	16 298.8
Alberta	786.5	3 837.1	6 105.3	10 729.0
British Columbia	21.1	235.5	692.0	948.6
<b>Total</b>	<b>4 146.1</b>	<b>16 190.8</b>	<b>25 126.1</b>	<b>45 463.0</b>

## Notes:

The *Canada Land Inventory* data provided above include dependable agricultural land that has been converted to roads, urban areas and other non-agricultural uses. In 1996, Canada had approximately 38 million hectares of dependable agricultural land actually available for agriculture.

Class 1: soils in this class have no significant limitations for crops.

Class 2: soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices.

Class 3: soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices.

## Sources:

Environment Canada, 1982.

Statistics Canada, Environment Accounts and Statistics Division.

Given these circumstances, any increases in agricultural production in Canada will have to rely principally on the extraction of higher yields from a diminishing stock of dependable agricultural land and the increased productivity of marginal land.

### Related indicators:

#### Urban Land Use

#### Environmental Sustainability: Canada's Agricultural Soils<sup>2</sup>

2. Part of Environment Canada's *National Environmental Indicator Series*.





## 5 Urban Land Use

*Urban Land Use* describes and measures the area of land used for urban purposes in Canada,<sup>1</sup> and the portion of this area that occupies dependable agricultural land.<sup>2</sup> The fact that 90% of Canadians live in a narrow band along the southern border means that the effects of urbanization in Canada are concentrated in this relatively small area. Since this is the same strip of land where much of the dependable agricultural land is located, one of the major effects of urbanization is the loss of agricultural land.

Canadian cities and towns have expanded steadily since their establishment. Between 1971 and 1996 for example, they gobbled up more than 12 100 square kilometres of surrounding land (Table 5a). This area, more than twice the size of Prince Edward Island, represented an increase of 76% in urban land use over the period. Much of the expansion occurred around smaller centres (those with populations of less than 100 000 persons), where it was not uncommon to record a doubling in the area of urban land. Ontario's urban area alone grew by 3 472 square kilometres.

Table 5a  
Urban Land Use, 1971-1996

Province	1971	1981	1991	1996	Change
					1971-1996
square kilometres				percent	
Newfoundland	455	479	622	825	81
Prince Edward Island	56	76	96	136	144
Nova Scotia	541	600	763	948	75
New Brunswick	618	599	869	1 078	74
Quebec	4 255	4 400	5 711	6 830	61
Ontario	5 545	6 019	7 593	9 017	63
Manitoba	695	749	977	1 126	62
Saskatchewan	752	884	1 131	1 312	74
Alberta	1 424	2 080	2 667	3 302	132
British Columbia	1 564	2 129	2 673	3 471	122
<b>Total</b>	<b>15 905</b>	<b>18 015</b>	<b>23 103</b>	<b>28 045</b>	<b>76</b>

Note:

Figures may not add up to totals due to rounding.

Source:

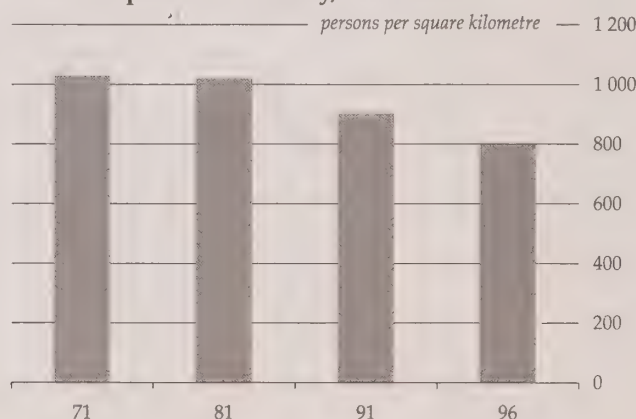
Statistics Canada, Environment Accounts and Statistics Division.

Growth in urban area can be attributed to changes in population and urban form. Over the 1971 to 1996 period, urban dwellers increased from 16.4 to 22.5 million people, a jump of 37%. Combined with the entry of the "baby boom" generation into the housing market, this dramatically expanded the demand for new homes.

The preferences in location and type of home also changed and accelerated the expansion of urban areas. Before the introduction of automobiles, employment in urban areas was concentrated in the central core and houses were located on small lots often within walking distance to work, shopping and other amenities. By the mid-1900s this trend began to change, largely due to the use of automobiles and the development of related infrastructure. Urban dwellers started to live away from the central core and relied on their automobiles for many daily activities. By 1998, there were almost 18 million highway vehicles<sup>3</sup> registered in Canada, an increase of over 30% since 1980 (Statistics Canada, 1998). A new urban form has emerged, shaped by car-oriented planning, (Environment Canada, 1996) that has led to what is commonly referred to as "urban sprawl".

This new urban form is dominated by single-family detached dwellings. These dwellings consume more land than other dwelling types such as apartments and townhouses. Almost 60% of all dwellings in Canada are single-family detached dwellings (Statistics Canada, 1997a) and they are commonly located on relatively larger lots away from the central core. Shopping malls, industrial parks and recreational facilities, commonly found in suburbs, also contribute to urban sprawl. This means that more space is needed to house a given population, resulting in a decline in urban population density. In 1971, the average population density in Canadian cities was 1 030 persons per square kilometre; this figure had fallen to 799 persons by 1996 (Figure 5a).

Figure 5a  
Urban Population Density, 1971-1996



Source:

Statistics Canada, Environment Accounts and Statistics Division.

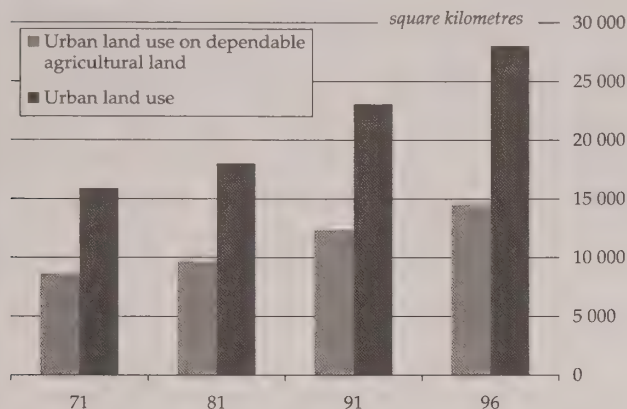
1. The area of land used for urban purposes in the Yukon Territory and the Northwest Territories (including Nunavut) is not included in any of the figures presented for this indicator.

2. The total area of dependable agricultural land is taken as that classified to *Canada Land Inventory* agricultural land classes 1 through 3. These classes include all land areas that are not hampered by severe constraints for crop production. Refer to *Agricultural Land Use and Supply* indicator for more information.

3. Highway vehicles include private cars, trucks and truck cabs, buses, motorcycles, mopeds, ambulances, hearses and fire trucks.



Figure 5b  
Urban Land Use on Dependable Agricultural Land,  
1971-1996



Source:  
Statistics Canada, Environment Accounts and Statistics Division.

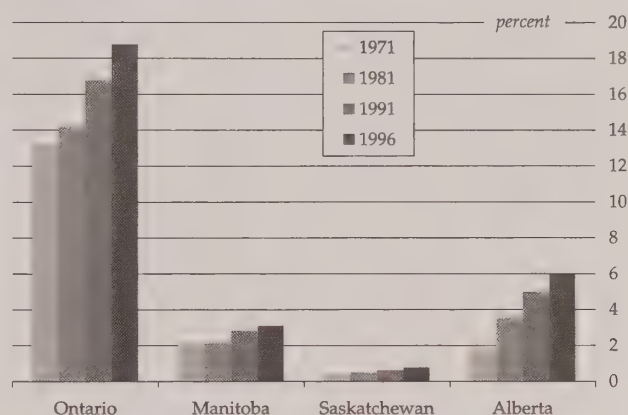
Urban growth generally involves the conversion of agricultural land to urban uses. Of the total amount of land converted to urban uses during the 1971 to 1996 period, slightly less than half, or 5 900 square kilometres, was dependable agricultural land (Figure 5b). The expansion of urban areas in Canada in the last 30 years has thus resulted in a loss of dependable agricultural land. As of 1996, urban land in Canada occupied 3.2% of dependable agriculture land.<sup>1</sup>

More than 52% of Canada's very best agricultural land—that classified to *Canada Land Inventory* Class 1—is concentrated in Ontario.<sup>2</sup> Most of this land is found in the same part of the province where urbanization has been, and continues to be, the greatest: the densely populated south. One of the results of urbanization in Ontario has therefore been the loss of a substantial portion of the province's Class 1 agricultural land. As of 1996, nearly 19% of this land was being used for urban purposes (Figure 5c). This land is, for all intents and purposes, permanently lost to agriculture.

Outside of Ontario, other provinces with significant areas of Class 1 agricultural land have also experienced losses due to urbanization. The most important of these occurred in Alberta and Manitoba; Saskatchewan still retains most of its Class 1 land.<sup>3</sup>

It should be noted that the measures above do not take into account two important issues. First, urbanization of agricultural land affects speciality crops that have a limited ability to flourish elsewhere in Canada (e.g., fruit belts in Niagara and Okanagan regions). Second, urban areas also influence land uses in surrounding rural areas. For instance, golf courses, gravel pits, recreational areas, waste management facilities and other installations are often located on agricultural land abutting urban areas. Essentially, the effects of urban areas extend beyond their physical boundaries.

Figure 5c  
Class 1 Agricultural Land Occupied by Urban Land,  
1971-1996



Source:  
Statistics Canada, Environment Accounts and Statistics Division.

#### Related indicators:

*Agricultural Land Use and Supply*

*Environmental Sustainability: Canada's Agricultural Soils*<sup>4</sup>

1. This figure does not include the amount of dependable agricultural land occupied by large urban areas prior to the development of the *Canada Land Inventory*. Neither does it include areas occupied for non-agricultural purposes outside of cities, such as road and utility networks.

2. Class 1 land is Canada's only land with no significant constraints for crop production.

3. No other province in Canada is home to a significant amount of Class 1 land.

4. Part of Environment Canada's *National Environmental Indicator Series*.





## 6 Energy Use per Unit of Household Expenditure

*Energy Use per Unit of Household Expenditure* measures the quantity of energy used in association with an average \$1 000 of goods and services purchased by Canadian households.

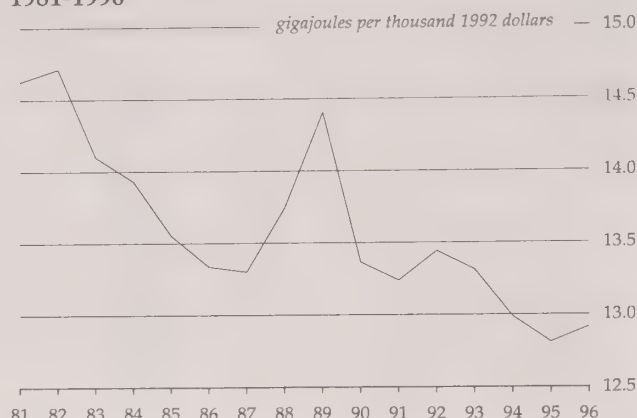
The indicator captures households' "direct" energy use (energy used for family cars and home heating for example) plus their "indirect" energy use (the energy needed to produce the goods and services that households buy). The indicator includes an estimate of the indirect energy that is used to produce the imported products that Canadian households purchase. In this way, it gives a complete picture of the energy use associated with household expenditures, regardless of the actual user of the energy: households themselves, Canadian industries or industries in other countries. Energy from all types of fossil fuels and electricity are included in the indicator.<sup>1</sup>

Over the period 1981 to 1996, energy use per unit of household expenditure declined by 12% (Figure 6a). In 1981, 14.62 gigajoules of energy were consumed for every \$1 000 (in 1992 dollars<sup>2</sup>) spent by households. By 1996, this figure had fallen to 12.92 gigajoules per \$1 000. These figures show that less energy was used in association with an average \$1 000 of household spending in 1996 than in 1981.

Taken alone, the declining trend in the energy used per unit of household expenditures would suggest a reduction in the contribution of households to Canada's total energy use. At the same time that energy use per unit of expenditure was falling, however, the total value of household expenditures rose by 44% in inflation-adjusted terms (Figure 6b). The result was an increase of 27% in total energy use associated with household expenditures (Figure 6c). Thus, although the decline in energy use per unit of expenditure restrained the growth in total household energy use between 1981 and 1996, its influence was overwhelmed by the much larger increase in total household spending.

Figure 6c presents total energy use associated with household expenditures between 1981 and 1996. Also shown is the split between the energy used by households themselves (direct energy use) and that used by businesses in producing the goods and services bought by households (indirect energy use). As can be seen, total energy use increased from 4 603 petajoules in 1981 to 5 864 petajoules in 1996, an increase of 27%. The majority of this increase

Figure 6a  
Energy Use per Unit of Household Expenditure, 1981-1996

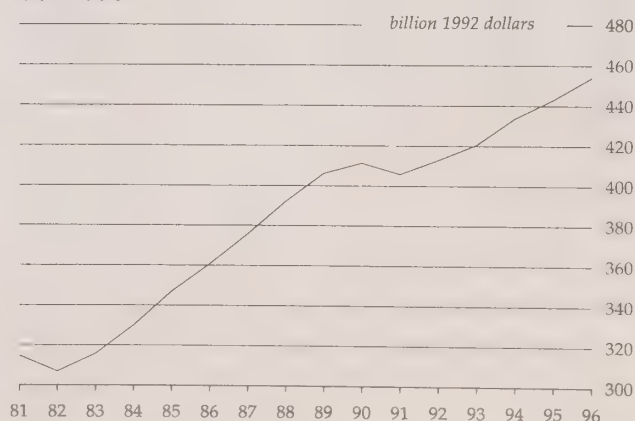


Source:  
Statistics Canada, Environment Accounts and Statistics Division.

(78%) was due to the 36% increase in indirect household energy use from 2 746 petajoules to 3 728 petajoules. Direct household energy use increased by only 15% (from 1 856 petajoules to 2 136 petajoules), somewhat less than the 20% increase in Canada's population over the period. This suggests that the average Canadian household became slightly more efficient in terms of its direct energy use between 1981 and 1996. However, because the average household purchased considerably more goods and services in 1996 than in 1981, its total energy use (direct plus indirect) was much higher at the end of the period than at the beginning.

Looking at figures 6a and 6c in more detail, three distinct periods are apparent. The first of these is 1981 to 1987, during which there was a considerable decline in energy use per unit of expenditure. Two major factors contributed to this decline: the economic recession of 1981-82 and the generally rising cost of crude oil during first half of the

Figure 6b  
Household Expenditures on Goods and Services, 1981-1996

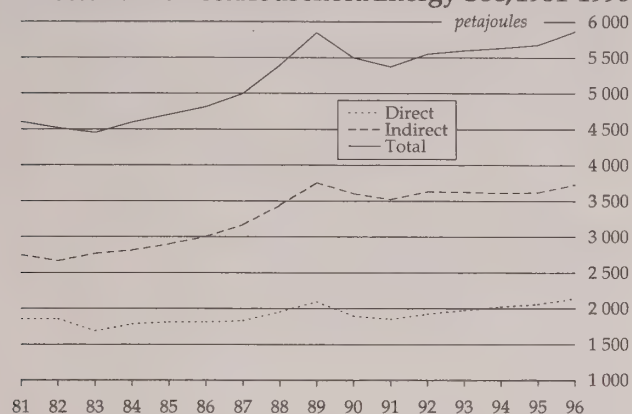


Source:  
Statistics Canada, CANSIM, matrix 8616 (series D22967).

1. The very small amount of energy derived from alternative energy sources such as wind and solar power are not included.
2. So that the indicator tracks only real changes over time in energy use per unit of household purchases, these purchases are measured in constant (or inflation-adjusted) dollars. This eliminates the effect of inflation, which would otherwise tend to push the value of the indicator downward over time.



Figure 6c

**Direct and Indirect Household Energy Use, 1981-1996**

Source:

Statistics Canada, Environment Accounts and Statistics Division.

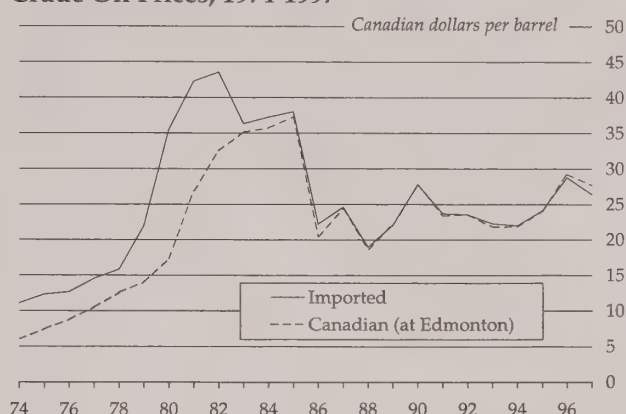
1980s. The combined effect of these factors was to restrain growth of both household direct and indirect energy use. Direct household energy use actually fell between 1981 and 1987, while indirect use rose at slightly less than 2.5% annually. At the same time, the inflation-adjusted value of household expenditures grew at an annual rate of 3.0%. The result was the 9.1% decline in energy use per unit of household expenditure seen in figure 6a. The message behind this result is clear: when energy prices are high, businesses and households can, and do, respond by increasing their energy efficiency.

The second period of interest is the late-1980s. The major event of relevance during this time was the dramatic fall in crude oil prices that occurred in 1986 (Figure 6d). This was followed by a rapid increase in energy use per unit of household expenditure between 1987 and 1989 (Figure 6a). This stands in stark contrast to the early 1980s, when energy prices were high and energy use per unit of household expenditure was falling sharply. Likewise, the rate of increase of total household energy use increased substantially following the drop in oil prices in 1986. Between 1981 and 1985, total household energy use increased at an annual rate of just 0.5%. In contrast, it grew at an annual rate of 6.7% between 1986 and 1989 (Figure 6c).

The final period of interest is that from 1989 onward. The effect of the recession of 1990-91 is clearly evident in the steep decline in energy use per unit of household expenditure between 1989 and 1991. A 11.7% decrease in household direct energy use during this period coupled with essentially stable household expenditures led to this drop.

The period between the end of the recession in 1992 and 1996 was marked by a continued, but slower decline in energy use per unit of household expenditure. Unlike the early 1980s however, household direct energy use did not play a positive role in this decline. Whereas household direct energy use declined slightly during the early 1980s when oil prices were high and increasing, household direct

Figure 6d

**Crude Oil Prices, 1974-1997**

Source:

Statistics Canada, CANSIM, matrix 2491 (series E313012 and E313042).

energy use increased by 11.2% between 1992 and 1996, a period marked by relatively low and stable oil prices. Again in contrast to the early 1980s, household indirect energy use contributed positively to the decline in energy use per unit of household expenditure. Household indirect energy use increased by only 2.7% percent between 1992 and 1996. In contrast, household indirect energy use increased by 15.3% between 1981 and 1987.

It is interesting to ask what effect the composition of household expenditure had on indirect energy use in the mid-1990s.<sup>1</sup> It turns that if the pattern of household consumption that held in 1990 had continued unchanged until 1996, with only the level of expenditure increasing, household indirect energy use would have been 4.6% higher in 1996 than it actually was. This would have resulted in household energy use per unit of expenditure declining by only 1.1% rather than the 3.9% decline actually witnessed. The conclusion is that shifts in expenditure patterns away from energy intensive goods and services was more responsible for the continued decline in energy use per unit of expenditure in the 1990s than was increased energy efficiency on the part of the industries producing the goods and services.

**Related indicators:***Greenhouse Gas Emissions per Unit of Household Expenditure**Water Use per Unit of Household Expenditure**Energy Consumption*<sup>2</sup>

1. Not all goods and services require the same amount of energy in production. Paper products, for example, use more energy per dollar of production than do entertainment services. A mix of household expenditures that contains a lot of paper products and few trips to the cinema will therefore require more energy than a mix with less paper and more movies.

2. Part of Environment Canada's *National Environmental Indicator Series*.





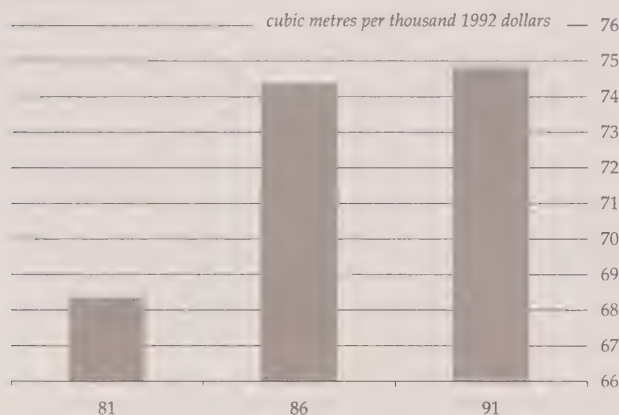
## 7 Water Use per Unit of Household Expenditure

*Water Use per Unit of Household Expenditure* measures the quantity of water withdrawn from the environment in association with an average \$1 000 of goods and services purchased by Canadian households.

The indicator captures households' "direct" water use (water used for cooking and cleaning for example) plus their "indirect" water use (the water needed to produce the goods and services that households buy). The indicator includes an estimate of the indirect water that is associated with the imported products that Canadian households purchase. In this way, it gives a complete picture of the water use associated with household expenditures, regardless of the actual user of the water: households themselves, Canadian industries or industries in other countries.

The period 1981 to 1991 saw an increase of 9.5% in water use per unit of household expenditure (Figure 7a). In 1981, 68 cubic metres of water were extracted from the environment for every \$1000 (in 1992 dollars<sup>1</sup>) spent by households. By 1991, this figure had risen to 75 cubic metres per \$1 000.

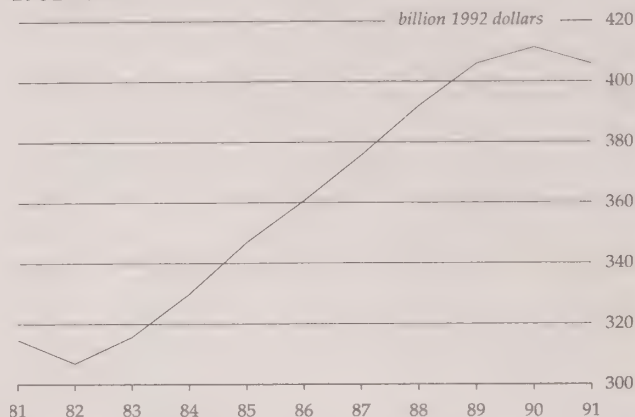
Figure 7a  
**Water Use per Unit of Household Expenditure, 1981, 1986 and 1991**



Source:  
Statistics Canada, Environment Accounts and Statistics Division.

In addition to the growth in water use per unit of household expenditure during this period, the total value of household expenditures increased by 29% in inflation-adjusted terms (Figure 7b). The combined effect of increasing water use per unit of expenditure and increased spending was a large increase (41%) in total water use

Figure 7b  
**Household Expenditures on Goods and Services, 1981-1991**

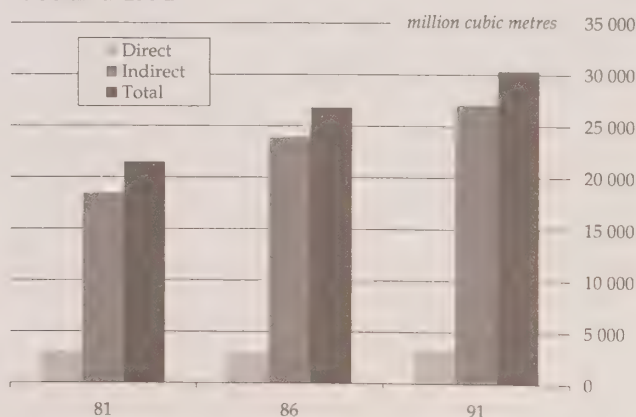


Source:  
Statistics Canada, CANSIM, matrix 8616 (series D22967).

associated with household expenditures over the period (Figure 7c).

Looking at Figure 7c in more detail, it can be seen that households' direct water use (water consumed in and around the home) was nearly constant between 1981 and 1991, even though the Canadian population grew by 13% over the period. This suggests that the average household became more efficient in its use of water during this time, perhaps because of the installation of water metering systems in municipalities where none existed before. Such systems allow municipalities to charge households according to the amount of water they use rather than on a flat-rate basis. Households that pay per unit of water are more likely to reduce their water consumption in order to save money than are those who pay a flat rate for their water.

Figure 7c  
**Direct and Indirect Household Water Use, 1981, 1986 and 1991**



Source:  
Statistics Canada, Environment Accounts and Statistics Division.

1. So that the indicator tracks only real changes over time in water use per unit of household purchases, these purchases are measured in constant (or inflation-adjusted) dollars. This eliminates the effect of inflation, which would otherwise tend to push the value of the indicator downward over time.

In contrast to their direct water use, households' indirect water use (the water needed by businesses to produce the goods and services purchased by households) grew by 47% between 1981 and 1991. Much of this growth is explained by the above-mentioned 29% percent increase in household expenditures. The other major factor was the increased water use by industry, in particular the Electric Power and Other Utilities Industry (Table 7a).

Electric power is generated in Canada mainly in hydroelectric stations and thermal electric stations (fossil fuel and nuclear). Over the period 1981 to 1991, the share of electricity generated in thermal electric power stations increased from 32% to 39% of total electric power generation in Canada (the remainder was almost entirely hydroelectric generation). A great deal of water is used in thermal power stations for cooling purposes, so this change in the composition of electricity production meant that more water was used by this industry in 1991 than in 1981.<sup>1</sup> Over the period, total water intake by this industry increased by 56%.

Since households purchase a lot of electricity, the growth in water use for thermal electric power was a major factor behind the increase in household indirect water use (beyond that which is explained by increased household expenditures).

It should be mentioned that water used for cooling purposes in thermal electric generating stations is typically returned in its entirety to its source soon after withdrawal. However, its temperature upon return is usually higher than that of the water in the surrounding environment. This can result in localized warm areas near the outfalls of thermal electric power stations, sometimes with negative impacts on aquatic life in the vicinity.

Table 7a  
Major Water Using Sectors, 1981, 1986 and 1991

Sector/Industry	Total intake		
	1981	1986	1991
	million cubic metres		
<b>Business sector</b>			
Agriculture	3 125	3 559	3 991
Mining	624	544	489
Other primary resource industries	252	180	183
Paper and Allied Products	3 170	3 082	2 943
Primary Metal	2 074	2 057	1 610
Chemical and Chemical Products	3 188	1 694	1 326
Other manufacturing industries	1 721	1 548	1 570
Electric Power and Other Utilities	18 166	24 964	28 289
Other industries	638	735	816
<b>Sub-total, business sector</b>	<b>32 958</b>	<b>38 363</b>	<b>41 217</b>
Non-business sector	727	823	540
Household sector	3 033	2 896	3 263
<b>Total, whole economy</b>	<b>36 717</b>	<b>42 083</b>	<b>45 019</b>

**Note:**

Figures may not add up to totals due to rounding.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.

**Related indicators:**

*Greenhouse Gas Emissions per Unit of Household Expenditure*

*Energy Use per Unit of Household Expenditure*

*Municipal Water Use and Wastewater Treatment<sup>2</sup>*

1. The water used to power turbines in hydroelectric generating stations is not considered to be withdrawn from the environment and, therefore, is not included in the estimates of water use in this indicator.

2. Part of Environment Canada's *National Environmental Indicator Series*.





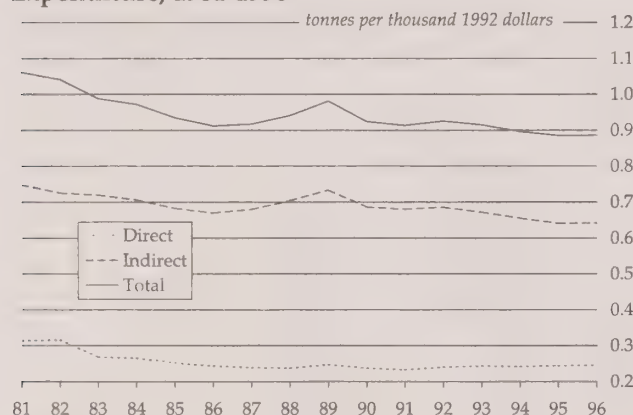
## 8 Greenhouse Gas Emissions per Unit of Household Expenditure

*Greenhouse Gas Emissions per Unit of Household Expenditure* measures the quantity of carbon dioxide, methane and nitrous oxide emitted in association with an average \$1 000 of goods and services purchased by Canadian households. Emissions of these gases are weighted, added together and reported in terms of a single measure called "carbon dioxide equivalent emissions."<sup>1</sup>

The indicator captures households' "direct" greenhouse gas emissions (those that come from private cars and home heating for example) plus their "indirect" emissions (those associated with the production of the goods and services that households purchase). The indicator includes an estimate of the indirect greenhouse gas emissions that are associated with the imported goods and services that Canadian households purchase. In this way, it gives a complete picture of the greenhouse gas emissions associated with household expenditures, regardless of the source of the emissions: households themselves, Canadian industries, or industries in other countries.

Figure 8a

### Greenhouse Gas Emissions per Unit of Household Expenditure, 1981-1996



Source:

Statistics Canada, Environment Accounts and Statistics Division.

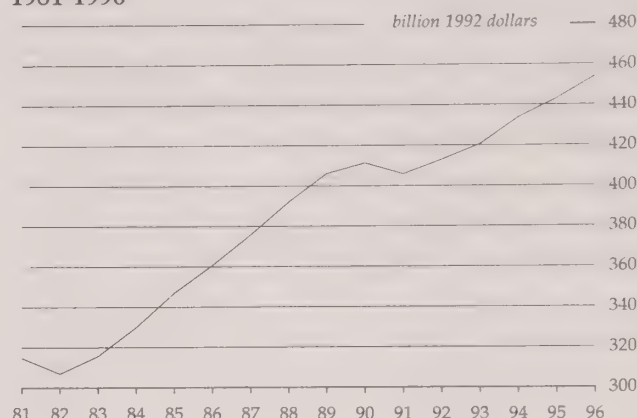
Greenhouse gas (GHG) emissions per unit of household expenditure declined 16.4% between 1981 and 1996 (Figure 8a).<sup>2</sup> One might expect this to have led to a decrease

1. Greenhouse gas emissions are expressed in terms of emissions per thousand constant dollars in order to eliminate the effects of both inflation and increased spending by households.

2. A comparison of GHG emissions per unit of household expenditure from Figure 8a with energy use per unit of household expenditure (Figure 6a of the *Energy Use per Unit of Household Expenditure* indicator) reveals a close correlation between the two. This is to be expected, as energy use is by far the most important source of greenhouse gas emissions in Canada. Readers are encouraged to consult the *Energy Use per Unit of Household Expenditure* indicator for a discussion of the factors influencing household energy use between 1981 and 1996; this analysis is directly relevant to GHG emissions.

Figure 8b

### Household Expenditures on Goods and Services, 1981-1996



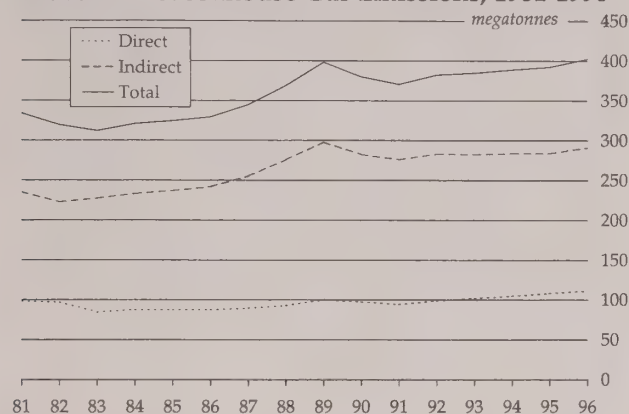
Source:

Statistics Canada, CANSIM, matrix 8616 (series D22967).

in total GHG emissions attributable to households. This was not the case, however, since the decline in emissions per \$1 000 was overwhelmed by a 44.2% increase in household spending (Figure 8b). Thus, total GHG emissions attributable to household purchases climbed 20.6% between 1981 and 1996 (Figure 8c).

Emissions per unit of expenditure over time provide some insight into the responses of households and industries to economic recession and higher energy prices. The economic down-turn of the early 1980s, combined with generally rising energy prices, coincided with a decline in both direct and indirect GHG emissions per unit of household expenditure between 1981 and 1986 (Figure 8a). The dramatic drop in oil prices in 1986 (Figure 8d) preceded a rapid increase in indirect emissions and a smaller rise in direct emissions per unit of household expenditure, both peaking in 1989. The economic recession of 1990-91 brought a reversal of this trend. Direct and indirect GHG emissions per unit of household expenditure both fell between 1989 and 1991, dropping 5.8% and 7.3%, respectively. The two time series begin to diverge in 1991, with direct GHG emissions per unit of household expenditure increasing by 5.3% and indirect GHG emissions per unit of household expenditure declining 5.8% by 1996. This reflects the fact that household fossil fuel use climbed 19.2% between 1991 and 1996. This is over 3 times more than the 5.9% growth of the Canadian population over the same period, illustrating a dramatic rise in per capita household consumption of fossil fuel energy.

Figure 8c  
Household Greenhouse Gas Emissions, 1981-1996



Source:  
Statistics Canada, Environment Accounts and Statistics Division.

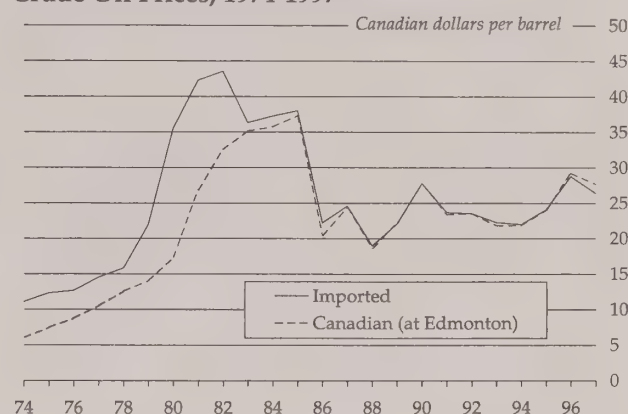
There are many factors that influence the GHG emissions associated with household expenditures. Two of these include changes in the mix of fossil fuels used to produce the goods and services used by households, and changes in the composition of household spending.

Fossil fuel mix is important because each fuel releases different quantities of greenhouse gases per unit of energy obtained. Deriving a given quantity of energy from sub-bituminous coal, for example, releases about twice the carbon dioxide that would be released if the energy were derived from natural gas. Between 1981 and 1996, natural gas went from supplying 35% to 40% of the direct and indirect fossil fuel energy associated with household expenditures, while petroleum and coal products declined from 65% to 60%. This partially explains why the energy use per unit of household expenditure fell only 11.7% between 1981 and 1996 while the GHG emissions per unit of household expenditure dropped 16.4%.

Change in the composition of household spending is another, and perhaps more important factor.<sup>1</sup> Total indirect household GHG emissions remained fairly stable between 1990 and 1996, increasing only 3.0% (Figure 8c). If households had purchased goods and services in 1996 in the same proportion that they had in 1990, these total indirect GHG emissions would have been 8.8% higher than in 1990. This difference accounts almost completely for the drop in GHG emissions per unit of household expenditure over the period (Figure 8a), suggesting the significant impact of the goods and services mix of household spending on these emissions.

1. Not all goods and services result in the same quantity of GHG emissions during production. Paper products, for example, release more GHGs per dollar of production than do entertainment services. A mix of household expenditures that contained a lot of paper products and few trips to the cinema would therefore result in more indirect GHG emissions than a mix with less paper and more movies.

Figure 8d  
Crude Oil Prices, 1974-1997



Source:  
Statistics Canada, CANSIM, Matrix 2491 (series E313012 and E313042).

#### Related indicators:

*Water Use per Unit of Household Expenditure*

*Energy Use per unit of Household Expenditure*

*Climate Change<sup>2</sup>*

*Energy Consumption<sup>2</sup>*

2. Part of Environment Canada's *National Environmental Indicator Series*.





## 9 Environmental Protection Expenditures in the Business Sector

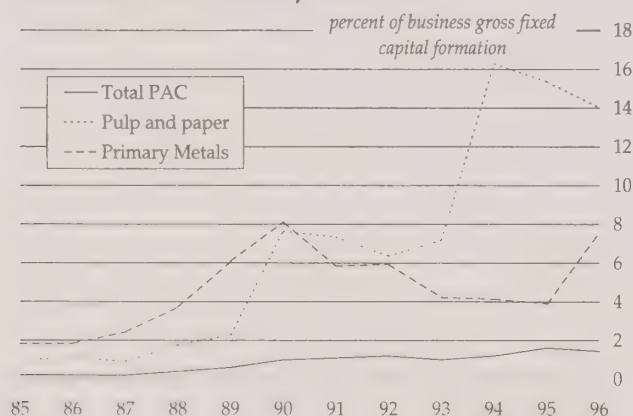
*Environmental Protection Expenditures in the Business Sector*<sup>1</sup> measures current (operating) and capital and repairs (investment) expenditures made to prevent, abate or control pollution and other causes of environmental degradation. These expenditures are defined as those made to comply with Canadian and international environmental regulations and conventions that apply in Canada.

Total environmental protection expenditures of businesses were estimated at \$4.7 billion in 1997, down 3% from 1996. Operating costs accounted for 63% of these expenditures, and pollution abatement and control (PAC) was responsible for most environmental protection expenditures incurred by businesses.

**Business investment spending:** In 1997, business investment in environmental protection was \$1.7 billion, representing 1.2% of business gross fixed capital formation.<sup>2</sup> However, even though businesses' relative cost of environmental compliance remained below 2% between 1985 and 1996, they used an increasing share of their gross fixed capital formation for pollution abatement and control purposes until 1995 (Figure 9a).

Figure 9a

### Business Investment Spending on Pollution Abatement and Control, 1985-1996



**Sources:**

Statistics Canada, Environment Accounts and Statistics Division; Investment and Capital Stock Division; and Cansim, series D15674.

In some industries, companies invest a much larger share of their budget in pollution abatement and control than the national average. Thus PAC accounted for 14% of overall investment in the pulp and paper industry and 7.5% of

investment in the primary metals industry in 1996 (Figure 9a). During the 1990s, the pulp and paper industry was subject to strict environmental regulations on its air emissions and discharges into streams. It was to be in conformity with regulations on effluents by 1995.

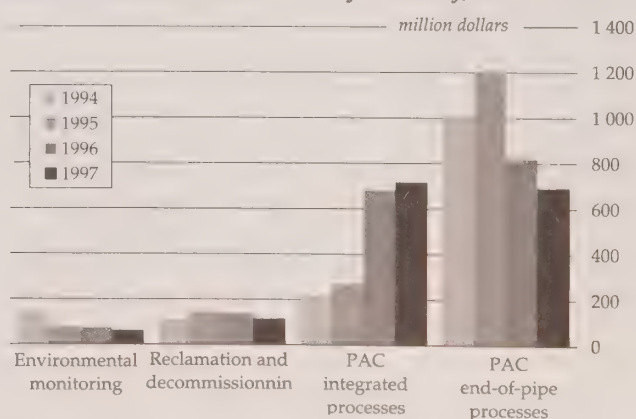
**Environmental protection expenditures by industry:** The pulp and paper industry was responsible for the largest share (19%) of investment expenditures on pollution abatement and control in 1997, followed by the primary metals industry (16.6%) and the crude petroleum and natural gas industry (10.5%). However, between 1996 and 1997, investment expenditures in the pulp and paper industry fell by nearly \$320 million (after a drop of more than \$171 million from 1995 to 1996), since most investments made to comply with environmental regulations had ended. Accordingly, pulp and paper companies devoted more resources to production processes and product quality rather than to the environment (Bailey, 1998).

Conversely, investment expenditures in the primary metals industry increased by \$140 million from 1995 to 1996 and by \$40 million in 1997. Primary metals plants reported increased recycling and cleanup, more efficient processes and investments in PAC equipment (Commission for Environmental Cooperation, 2000).

**Environmental protection expenditures by activity:** The decline in investment expenditures for end-of-pipe processes in 1996 (nearly \$400 million) and 1997 (more than \$130 million) is mainly attributable to pulp and paper and crude petroleum and natural gas companies. End-of-pipe processes accounted for the largest share of investments associated with environmental protection until 1996 (Figure 9b).

Figure 9b

### Business Investment Expenditures on Environmental Protection by Activity, 1994-1997



**Source:**

Statistics Canada, Environment Accounts and Statistics Division.

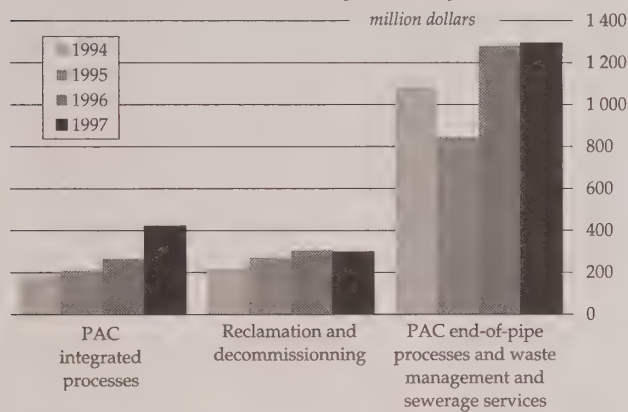
1. With some exceptions, this indicator excludes the following industries: agriculture, construction, transportation, distributive trade and services.

2. "Business gross fixed capital formation" consists of businesses' expenditures on new durable goods such as sewage treatment facilities.

Between 1995 and 1996, investment expenditures for PAC processes integrated into production systems more than doubled, rising from \$269 million to \$682 million. In 1997, they increased a further \$34 million. Pulp and paper and primary metals companies were responsible for three-fourths of the increase between 1995 to 1996. However, in 1997, investments in integrated processes in these two industries fell by \$182 million and \$19 million respectively.

With regard to operating expenditures, PAC end-of-pipe processes and waste management and sewerage services were the leading expenditure item, and they registered a slight increase in 1997, unlike investment expenditures (Figure 9c). The \$156 million increase in operating expenditures on PAC integrated processes between 1996 and 1997 resulted in part from an increase of nearly \$64 million in the pulp and paper industry.

Figure 9c  
**Business Operating Expenditures on Environmental Protection by Activity, 1994-1997**

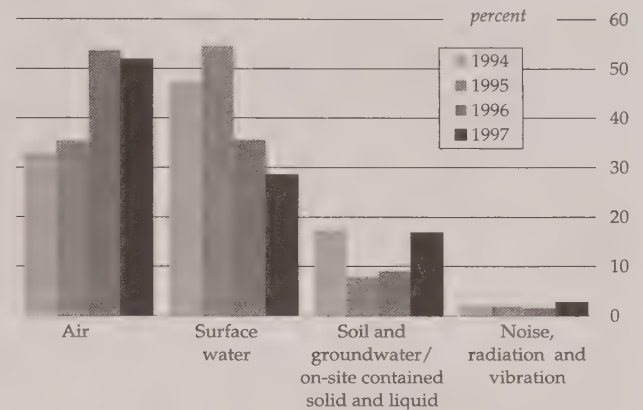


Source:  
Statistics Canada, Environment Accounts and Statistics Division.

**Investment by environmental domain:** Between 1994 and 1997, businesses made major changes in how they allocated their investments in pollution abatement and control. For example, between 1995 and 1997, investment expenditures for reducing substances released into surface water decreased, while there was an increase in investment expenditures on PAC systems designed to reduce air pollution and on-site solid and liquid wastes (Figure 9d). This shift in the focus of investment expenditures was observed both for end-of-pipe processes and for changes to integrated processes.

Such changes may be explained in part by the end of pulp and paper companies' cycle of intensive investment in waste water treatment systems and a shift to projects to reduce air pollution. Foundries also invested large amounts to modernize their facilities and prevent air emissions.

Figure 9d  
**Business Investment Expenditures on Pollution Abatement and Control by Environmental Medium, 1994-1997**



Source:  
Statistics Canada, Environment Accounts and Statistics Division.

#### Related indicator:

*Pollution Abatement and Control Expenditures in the Government Sector*





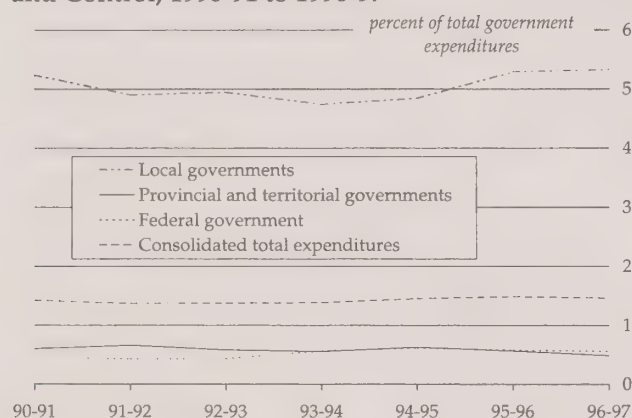
## 10 Pollution Abatement and Control Expenditures in the Government Sector

*Pollution Abatement and Control Expenditures in the Government Sector* measures the current (operating) and capital and repairs (investment) expenditures made by the federal, provincial/territorial and local governments in order to prevent or abate pollution. These expenditures represent one response of governments to the environmental effects of economic and human activity.

**Total pollution abatement and control (PAC) expenditures by level of government:** Since the early 1970s, government expenditures on PAC have increased at an average annual rate of 11.2%, reaching \$5.4 billion in 1996–97 (0.7% of GDP). These expenditures are only a small portion of total government expenditures (Figure 10a).

Figure 10a

### Government Expenditures on Pollution Abatement and Control, 1990–91 to 1996–97



Source: Statistics Canada, Environment Accounts and Statistics Division.

For example, pollution abatement and control expenditures accounted for only 2.8% of current expenditures on goods and services and government gross fixed capital formation<sup>1</sup> between 1990–91 and 1996–97, the period when PAC expenditures were at their highest level. If all transfer payments are included in governments' total expenditures, PAC represents only 1.4% of total expenditures<sup>2</sup> (Figure 10a).

It was local governments that devoted the largest share of their total expenditures to pollution abatement and control, mainly because they were responsible for the management of sewage and waste, the two largest expenditure items. In fact, the expenditures of local governments represented

annually an average of 71% of the total PAC expenditures of the three levels of government between 1970–71 and 1996–97.

In 1994–95, the federal program Canada Infrastructure Works was introduced, and one of its objectives was to improve municipal infrastructure. Between 1994–95 and 1998–99, the three levels of government invested a total of \$8.3 billion in the program (Office of the Auditor General, 1999). The amounts paid under this program have had a significant impact on pollution abatement and control expenditures, especially at the local government level.

It was in the Yukon Territory that the average expenditures for pollution abatement and control represented the largest share of local governments' expenditures between 1990–91 and 1996–97, followed by New Brunswick and the Northwest Territories (Table 10a). The average for the Yukon Territory is somewhat inflated by the fact that sewage management expenditures went from \$5.3 million to \$15 million between 1994–95 and 1995–96, at the start of the Canada Infrastructure Works program. In New Brunswick, the increase in expenditures coincided with a change in the method of solid waste management.

Table 10a

### Average Expenditures on Pollution Abatement and Control, 1990–91 to 1996–97

Province/Territory	Expenditures on pollution abatement and control as a proportion of total expenditures	
	Local governments	Provincial or territorial governments
	percent	
Newfoundland	3.3	0.2
Prince Edward Island	2.3	0.8
Nova Scotia	5.4	0.6
New Brunswick	12.9	1.1
Quebec	5.5	0.3
Ontario	4.8	0.5
Manitoba	4.0	0.3
Saskatchewan	3.5	1.2
Alberta	3.6	1.0
British Columbia	6.4	0.9
Yukon Territory	15.5	0.8
Northwest Territories <sup>1</sup>	11.7	0.3
<b>Canada</b>	<b>5.0</b>	<b>0.6</b>

Note:

1. Includes Nunavut.

Source:

Statistics Canada, Environment Accounts and Statistics Division.

Among provincial governments, the government of Saskatchewan on average devoted the greatest share of its total expenditures to pollution abatement and control. This is partly due to the fact that in 1990–91, \$25 million were invested in PAC activities.

**Total pollution abatement and control expenditures by activity:** Sewage and waste collection and disposal expenditures accounted for the lion's share of PAC expenditures. Between 1970–71 and 1996–97, these



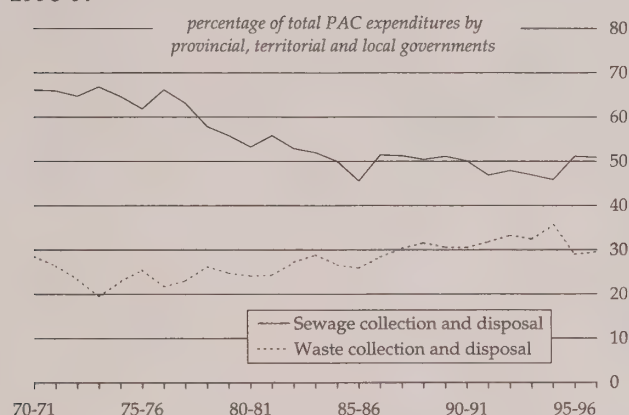
expenditures averaged 71% of total PAC expenditures. In 1996–97, they amounted to nearly \$4 billion, compared to total PAC expenditures of \$5.4 billion.

In the consolidated PAC expenditures of provincial, territorial and local governments, sewage collection and disposal expenditures have always accounted for a greater share than waste collection and disposal expenditures (Figure 10b).

Furthermore, since these two activities are managed primarily by local governments, they account for most of their pollution abatement and control expenditures, averaging 97% during the study period.

Figure 10b

**Expenditures of Provincial/Territorial and Local Governments on Sewage Collection and Disposal and Waste Collection and Disposal, 1970-71 to 1996-97**



Source:  
Statistics Canada, Environment Accounts and Statistics Division.

During the implementation of the Canada Infrastructure Works program between 1994–95 and 1998–99, local governments spent on average \$2.2 billion annually on water and sewer systems, compared to \$312 million spent by the federal government and \$164 million<sup>1</sup> by provincial governments. Local governments in most provinces experienced an increase in the sewage collection and disposal expenditures during the program compared to the amounts spent during the 1980s.

On average, “other” pollution abatement and control expenditures<sup>2</sup> accounted for 24% of total PAC expenditures between 1970–71 and 1996–97. Most of these expenditures were made by the federal and provincial governments and

are mainly associated with the administration of environment departments, but also with programs, such as those related to the cleanup of the Great Lakes and the St. Lawrence River or the protection of animal species.

The importance of being aware of government actions and expenditures to protect the environment from human activity is underscored by the announcement of new programs and special funds, such as the renewal of the Canada Infrastructure Works program for the period between 2000–01 and 2005–06, assistance for the cleanup of the Great Lakes, the Sustainable Development Technology Fund, and future programs to fulfil Canada’s commitments under the Kyoto Protocol on Climate Change.

PAC expenditures represent a portion of expenditures to protect the environment. An in-depth analysis of other sources of data on expenditures made for, say, wildlife and habitat protection, protected areas and natural resources conservation will enable us to obtain more thorough coverage of governments environmental protection expenditures.

**Related indicator:**

*Environmental Protection Expenditures in the Business Sector*

1. This average does not include the 1996–97 and 1997–98 fiscal years, since the data for those years were not available.

2. This category is divided in two for the federal and provincial governments: expenditures for other pollution control that are not otherwise classified such as air pollution prevention; and expenditures for other environmental services such as the administrative expenditures of environment departments. Local governments do not register these two categories separately.







*Annex A*  
*Indicator Technical Supplement*





## Indicator Technical Supplement

To aid the user in interpreting the indicators, a technical supplement for each indicator is laid out using a standard format containing 10 separate fields. These fields are briefly described below.

**Theme:** The thematic area into which the indicator falls. There are five such areas in the system, each of which is identified by its own title:

- natural resource stocks;
- use of land resources;
- consumption of materials and energy;
- waste production; and
- environmental protection expenditures.

**Geographic scope:** The geographic region covered by the indicator. Although most of the indicators are national in scope, many of them are supported by statistics that are provided at the provincial level on the CD-ROM component of the system.

**Time series:** The time period (in years) for which the indicator currently exists. Readers should pay careful attention to this field, as the period varies widely among indicators.

**Frequency of update:** The frequency with which the indicator is updated.

**Description:** A description of the indicator outlining what it measures and important characteristics or features of the indicator.

**Significance:** A discussion of the usefulness of the indicator for measuring one or more of:

- the environmental sustainability of economic development;
- the economy's reliance or impact on the environment;
- the contribution of the environment to the economy;
- societal responses to environmental degradation.

**Method of calculation:** A very brief description of the data sources and methods used in the calculation of the indicator. Users interested in more detailed descriptions of sources and methods are encouraged to consult *Concepts, Sources and Methods of the Canadian System of Environmental and Resource Accounts* (Statistics Canada, 1997). An electronic version of this guidebook (in Adobe Acrobat format) is included on the CD-ROM component of the system.

**Data limitations:** A discussion of the limitations imposed on the indicator by the quality of the underlying data and/or methods. Users are encouraged to bear these limitations in mind when interpreting the information presented in the indicator.

**Reliability:** A relative measure of the reliability of the indicator based on data quality and conceptual and methodological soundness. Indicators are given one of the following ratings:

- class 1 – very reliable
- class 2 – reliable
- class 3 – acceptable.

Indicators are considered to be “very reliable” (class 1) when they are characterized by source data that are:

- mainly derived from Statistics Canada surveys, or from other sources that are considered to be highly reliable; and
- easily integrated into the system without the need for major adjustments to correct for shortcomings in coverage (spatial, temporal, sectoral or environmental) or classification;

and when they are characterized by concepts and methods that:

- are based on accepted environmental, economic or statistical theory;
- do not require arbitrary or subjective decisions regarding important parameters; and
- are compatible with the concepts and methods used in the *Canadian System of National Accounts*.

Indicators that meet all but one of the above criteria are deemed to be “reliable” (class 2). Those that fail to meet two or more of the criteria are deemed to be “acceptable” (class 3).

**Related indicators:** A list of related *Econnections* indicators and, where relevant, related indicators from Environment Canada's *National Environmental Indicators Series*. The basis for the relationship can be similarities in theme or methodological/conceptual approach.



## A.1 Natural Resource Wealth

**Theme:** Natural Resource Stocks

**Geographic scope:** National

**Time series:** 1978 to 1997

**Frequency of update:** Yearly

**Description:** *Natural Resource Wealth* measures the contribution of Canada's stocks of timber, energy<sup>1</sup> and mineral<sup>2</sup> resources to national wealth at the end of each year. Annual estimates of the market value of these resource stocks are made and compared with the other assets that comprise national wealth.<sup>3</sup> Not all stocks of timber, energy and mineral resources are measured however. In the case of energy and minerals, only the portion of Canada's total stock that is known to exist with a high degree of certainty and that can be profitably extracted today is valued. In the case of timber stocks, the portion of the forest that is valued is that which is accessible for harvesting, where commercially valuable species grow to a marketable size within a reasonable length of time, and where harvesting is allowed. These more limited timber, energy and mineral stocks, referred to here as natural resource *assets*, are the same stocks measured in physical terms in the indicator of *Physical Quantities of Natural Resource Assets*. The estimates presented in the two indicators are therefore comparable.

**Significance:** The monetary value of natural resource stocks serves as an indicator of the contribution of resources to our national wealth. Wealth, in turn, is an important indicator of economic well-being, as it represents the potential for future income.

Historically, Statistics Canada's measurement of national wealth has included only the value of manufactured assets (infrastructure, buildings and machinery) and agricultural and developed land. Natural resources other than these land areas were excluded. *Natural Resource Wealth* represents the first time that a broader measure of Canada's natural resource wealth has been integrated into an estimate of national wealth.

The combination of natural resource wealth with the wealth represented by manufactured assets and agricultural and developed land allows us to assess whether total national wealth is maintained over time. In other words, it tells us whether our current level of national

income can be sustained. Questions that can be addressed by a combined measure of natural and produced wealth include:

- Is the value of our renewable resource stocks being maintained?
- To what extent is the value of our energy and mineral stocks being reduced by depletion or increased by exploration and development activity?
- If the value of natural resource stocks is declining, is there an offsetting gain in the value of manufactured assets to make up for this loss?

**Method of calculation:** Natural resource asset stocks are valued at their estimated market value, the price they would bring if they were sold in the open market. This value is based on the difference between the annual cost of extraction of a given resource and the revenue generated from sale of the resource. This difference is referred to as "rent." Costs of extraction include both operating costs, such as wages and supplies, and capital costs, such as expenditures on exploration, infrastructure and equipment. Data for these costs, and for the value of production, are obtained from annual surveys of the resource-producing industries. For energy and mineral resources, data for the petroleum and mining industries are used. For timber resources, unit rent is based on data for the logging and wood-processing industries.<sup>4</sup>

The total value, or wealth, associated with the stock is calculated as the present value of all future annual rent that the stock is expected to yield.<sup>5</sup> In each year, it is assumed that depletion of energy and mineral stocks will continue at the current rate until the stock is fully depleted. In the case of timber, the assumption is made that the rate of extraction in each year can continue indefinitely. To the extent that this harvest rate is above the long-term sustainable rate, the timber asset will be overvalued (Statistics Canada, 1997).

**Data limitations:** The natural resources currently included in *Natural Resource Wealth* represent only part of the wealth associated with the natural environment. In particular, the value of services provided by the environment, such as waste assimilation or recreational opportunities, is omitted. So too are the environmental costs of resource extraction, such as the loss of wildlife habitat or degradation of water quality. Since changes in environmental quality can impact economic activity, some environmental services and costs can, in principle, be valued. Methods for doing so are still at the experimental stage. A number of natural resources are also excluded from the calculation due to lack of data. These include gypsum and other industrial minerals, marine resources, and parks and other protected land.

1. Crude oil, natural gas, crude bitumen (tar sands) and coal.

2. Potash, copper, gold, iron, lead, molybdenum, nickel, silver, uranium and zinc.

3. Note that the estimates of natural resource wealth measure the value of the resources only and not the value of the manufactured assets used in resource extraction or processing.

4. The wood-processing industries are included because of the high degree of vertical integration in the forest products industry.

5. If annual rent happens to be negative in a year, the resource stock is given a value of zero, rather than a negative value, for that year.





**Reliability:** The estimates of resource wealth are considered to be reliable (class 2).

**Related indicators:**

*Physical Quantities of Natural Resource Assets*

*Total Resource Base*



## A.2 Physical Quantities of Natural Resource Assets

**Theme:** Natural Resource Stocks

**Geographic scope:** National

**Time series:** Variable

**Frequency of update:** Yearly

**Description:** *Physical Quantities of Natural Resource Assets* measures the size of Canada's stocks of timber, energy<sup>1</sup> and mineral resources<sup>2</sup> at the end of each year. Not all stocks of timber, energy and mineral resources are measured however. In the case of energy and minerals, only the portion of Canada's total stock that is known to exist with a high degree of certainty and that can be profitably extracted is measured. In the case of timber, the portion of the forest measured is that which is accessible for harvesting, where valuable species grow to a marketable size within a reasonable time, and where harvesting is allowed.<sup>3</sup> These more limited timber, energy and mineral stocks, referred to here as natural resource *assets*, are the same stocks that are measured in monetary terms in the indicator of *Natural Resource Wealth*. The estimates presented in the two indicators are therefore comparable.

**Significance:** Free of fluctuations due to price changes, physical estimates of resource asset stocks portray the actual quantities of natural resources that Canada has at its disposal in the short term.

The interpretation of physical stock estimates differs for renewable and non-renewable resources. For renewable resources, a constant stock size indicates that annual harvesting and other losses are offset by annual growth. For non-renewable resources, a constant size means that additions to the asset stock through new discoveries offset depletion of existing assets. Additionally, the current annual depletion rate of non-renewable resources can be compared to the asset stock size to provide a measure of asset life, or the number of years it will take to deplete the remaining stock.

**Method of calculation:** Estimates of timber asset stocks are based on a computer simulation of the growth, regeneration, harvest and natural loss of trees on timber-productive forestland. Data from *Canada's Forest Inventory (1994 version)* (Canadian Council of Forest Ministers, 1999) are used as a starting point in the simulation.

Estimates of energy and mineral asset stocks are taken from data published by a number of agencies and government departments. Estimates for crude oil, crude bitumen and natural gas are taken from the Canadian Association of Petroleum Producers, the Alberta Energy and Utilities Board and the departments of energy, mines and resources of Manitoba, Saskatchewan and British Columbia. Coal estimates are taken from Natural Resources Canada and the Alberta Energy and Utilities Board. Finally, estimates for metal resources are from Natural Resources Canada (Statistics Canada, 1997).

**Data limitations:** The simulation model used to estimate timber stocks does not take into account changes in the area of forestland used for timber harvesting since 1961.

**Reliability:** Estimates of resource asset stock size are considered to be reliable (class 2).

### Related indicators:

*Natural Resource Wealth*

*Total Resource Base*

1. Crude oil, natural gas, crude bitumen (tar sands) and coal.

2. Potash, copper, gold, iron, lead, molybdenum, nickel, silver, uranium and zinc.

3. The *Total Resource Base* indicator offers a perspective on resources that includes estimates for both resource assets and undiscovered stocks.





## A.3 Total Resource Base

**Theme:** Natural Resource Stocks

**Geographic scope:** National

**Time series:** None

**Frequency of update:** Occasional

**Description:** *Total Resource Base* compares the portions of Canada's timber, fossil fuel and selected metal resources that are currently viable (that is, are economic assets) with estimates of the total resource base that may be viable in the future. For timber, the total resource base is the area of land that is suitable for timber production and where the harvesting of timber is allowed. For other resources, the total resource base is the estimated quantity that will ultimately prove exploitable with the technology and infrastructure currently available or likely to be developed in the future.

Estimates of total resource base are revised only periodically by the responsible agencies. For this reason, the indicator does not show an annual time series of estimates, but presents a "snapshot" of the resource base at a point in time instead. A regular time series of estimates would be useful however, as it would allow assessment of the effect of changes in prices, production costs, infrastructure, land use and technical knowledge on Canada's resource base.

**Significance:** *Total Resource Base* is intended mainly as supplementary information for use in interpreting the physical and monetary estimates of resource asset stocks presented in the indicators of *Natural Resource Wealth* and *Physical Quantities of Natural Resource Assets*. While stocks of natural resource assets measure resource availability in the near future, the total resource base provides a means of assessing the resources that might become available in a more distant future. The indicator also portrays the cumulative impact of economic activity on the resource base by showing the portion of the resource base that has been exploited to date and that which remains for future use.<sup>1</sup>

**Method of calculation:** The estimate of the timber resource base is taken from a summary of *Canada's Forest Inventory (1994 version)* as summarized in the *Compendium of Canadian Forestry Statistics* (Canadian Council of Forest Ministers, 1999).

Estimates of the fossil fuel resource base are taken from the National Energy Board (1999). In the case of crude oil, crude bitumen and natural gas resources, the resource base is

divided into two components: discovered resources and undiscovered resources. Discovered resources are those that have been shown to exist by drilling, testing or production. Undiscovered resources are stocks believed to exist based on geological and geophysical evidence. These can include extensions to stocks that are already part of discovered resources and expected new discoveries.

Discovered resources are further classified into three sub-groups: cumulative production, remaining established reserves and other discovered resources. Cumulative production is that portion of the resource base that has been produced to date. Remaining established reserves are the part of the resource base that is known to be commercially viable today, but that has not yet been extracted. This is the component of the energy resource base that is measured in the indicators of *Natural Resource Wealth* and *Physical Quantities of Natural Resource Assets*. Other discovered resources, although known to exist, are those that are not presently economically viable. Their viability will require either an increase in selling prices, or a reduction in costs as a result of technological change or the construction of new infrastructure.

In the case of coal resources, the resource base is divided into three components: remaining established reserves, other resource of immediate interest and resources of future interest.<sup>2</sup> As with other fossil fuels, remaining establish reserves are the part of the resource base that is known to be commercially viable today, but that has not yet been extracted. Other resources of immediate interest are those that are attractive for further exploration or early development because of a combination of thickness, quality, depth and location. Resources of future interest are those contained in seams that, because of less favourable combinations of thickness, depth, quality and location, may only become exploitable in the foreseeable future with changes in economic factors and/or production techniques.

Estimates of the non-ferrous metal resource base are taken from Natural Resources Canada and the United States Geological Survey. Natural Resources Canada (Reed, 1997) presents estimates of proven and probable reserves of non-ferrous metals. Proven and probable reserves are the part of these resources that is known to exist with a very high degree of certainty through drilling and sampling, and that can be extracted profitably at current prices and with available technology. The United States Geological Survey (2000) provides a broader measure of the resource base. In addition to proven and probable reserves, the resource base includes resources that are known with less certainty, and those that, although currently not mineable at a profit, are considered to have reasonable potential for profitable extraction.

1. Currently, cumulative production figures are presented for fossil fuel resources only.

2. Data on cumulative production of coal resources are not currently available.



**Data limitations:** The estimates of fossil fuel resources become increasingly uncertain as one moves from remaining reserves to other discovered resources and finally to undiscovered resources.

**Reliability:** The estimates of total resource base are considered to be reliable (class 2).

**Related indicators:**

*Natural Resource Wealth*

*Physical Quantities of Natural Resource Assets*





## A.4 Agricultural Land Use and Supply

**Theme:** Use of Land Resources

**Geographic scope:** National

**Time series:** 1901 to 1996

**Frequency of update:** Every five years

**Description:** *Agricultural Land Use and Supply* measures the area of dependable agricultural land available in Canada and contrasts this with the area of land cultivated for crops. Dependable land is that which is generally free of severe constraints for the long-term cultivation of Canada's most common crops. It is, in other words, our good farmland. The area of land cultivated for crops is the sum of all areas actually used for crop production, whether dependable land or not.

**Significance:** This indicator provides a dual measure of the long-term sustainability of agricultural activity.

First, by contrasting the supply of dependable agricultural land with the area of land actually cultivated for crops, the indicator portrays the extent to which agricultural activity relies on marginal land. This is significant, because marginal land is often unsuitable for stable, long-term agricultural production. Such land is, by definition, affected by severe constraints for crop production (poor soil texture, inadequate drainage and adverse slope for example). Production on marginal land may also be more environmentally harmful, as these lands are often susceptible to soil damage resulting in erosion, and require greater inputs of fertilizers, pesticides and water to achieve a given yield. A sustainable agricultural system would, ideally, be one in which the area of land cultivated for crops coincided with the area of available dependable agricultural land.

Second, the indicator demonstrates how the total supply of dependable agricultural land has diminished since 1901. This loss has been brought about in large part by the conversion of agricultural land to urban and other uses.<sup>1</sup> Loss of dependable land to other uses is a key measure of the long-term sustainability of farming in Canada. Despite Canada's size, dependable agricultural land is a scarce resource in this country; less than 5% of our land is free from severe constraints for crop production.

**Method of calculation:** The area of land cultivated for crops, comprising both cropland and summerfallow areas, is available every five years from the *Census of Agriculture*.<sup>2</sup>

Estimates for non-census years are made by assuming a simple linear trend in area of land cultivated for crops between census years.

The total area of dependable agricultural land in Canada is taken as that classified to *Canada Land Inventory* (Environment Canada, 1981) agricultural land classes 1 through 3. These classes include all land areas that are not hampered by severe constraints for crop production. The area of dependable land that is actually available for agricultural use in a given year is estimated by subtracting the area of dependable land occupied for urban and other non-agricultural uses from the total area of dependable land in the country.

The data required to estimate urban and other non-agricultural uses of dependable land are taken from two sources. The first is the *Canada Land Use Monitoring Programme* (Environment Canada, 1989), which provides data on the area of dependable land occupied by major Canadian cities. Data for smaller urban centres and for other non-agricultural uses are taken from estimates compiled by the Organisation for Economic Co-operation and Development (1996). Urban land use data are available only every five years, following the population census. Estimates of urban land use for non-census years are made by assuming a simple linear trend in the area of dependable land occupied by urban land from one census year to the next (Statistics Canada, 1997).

**Data limitations:** 1) There was some under-coverage of agricultural land when the *Canada Land Inventory* was compiled in the 1960s and 1970s. This was partly because only the southern, populated region of the country was surveyed for the inventory. Although this region includes the vast majority of Canada's dependable agricultural land, small pockets of dependable land outside the region were not captured in the inventory. Under-coverage also resulted from the fact that large urban areas were not surveyed for the inventory. Since many of these cities occupied dependable land at the time, total dependable land is under-estimated by the inventory. 2) The available data on the area of dependable land used for urban purposes underestimate the area occupied by smaller urban centres.

**Reliability:** The *Census of Agriculture* data are very reliable (class 1). Data from the *Canada Land Inventory* and other sources used to calculate the supply of dependable land are considered acceptable (class 3).

**Related indicators:**

*Urban Land Use*

*Environmental Sustainability: Canada's Agricultural Soils*<sup>3</sup>

1. Aside from urban areas, other non-agricultural uses of dependable land include roadways, railroads, power lines, pipelines and parkland.

2. Statistics Canada, Agriculture Division.

3. Part of Environment Canada's *National Environmental Indicator Series*.



## A.5 Urban Land Use

**Theme:** Use of Land Resources

**Geographic scope:** National and provincial

**Time series:** 1971 to 1996

**Frequency of update:** Every 5 years

**Description:** *Urban Land Use* measures the area of land used for urban purposes in Canada<sup>1</sup> and the portion of this area that occupies dependable agricultural land.<sup>2</sup>

**Significance:** Despite Canada's relatively small population and large size, urban land use is an important issue in this country. Urbanization, and the changes in land use that go along with it, can have profound effects on the environment: groundwater and soil contamination; air pollution; land subsidence; increased flooding; displacement of natural flora and fauna; and loss of agricultural land to name a few.

The fact that 90% of Canadians live in a narrow band along the southern border means that the effects of urbanization in Canada are concentrated in this relatively small area. Since this is the same strip of land where much of the dependable agricultural land is located, one of the major effects of urbanization is the loss of agricultural land. To address this concern, this indicator tracks not only the changes in total urban land use over time, but also the changes in urban use of dependable agricultural land. Since dependable land is scarce in Canada—covering less than 5% of the country—the indicator provides one measure of long-term agricultural sustainability.

**Method of calculation:** This indicator is derived from "digital enumeration area boundary files." These electronic maps define the boundaries of the enumeration areas used in Statistics Canada's *Census of Population*. Using maps of this sort in combination with computer-based geographic information systems, it is straightforward to calculate the area occupied by urban enumeration areas<sup>3</sup> in each census year. This is the area that is defined as "urban land" for the purposes of this indicator.

Digital enumeration area boundary files first became available for the 1991 *Census*. Prior to 1991, only enumeration area centroid (points representing the "centre" of an enumeration area) were available in digital

format. Centroids cannot be used to estimate the area occupied by an enumeration area, so calculation of urban land area in other years (1971, 1981 and 1996) starts from an average urban enumeration area estimate based on the 1991 digital boundary file. This average area figure is used to digitally create circular buffer zones around enumeration area centroids. The areas within these circular buffer zones are then summed to yield an estimate of total urban land area. These urban area estimates are then developed into a separate digital map for each year.

To estimate the portion of urban land that occupies dependable agricultural land in each year, the digital maps representing urban areas are overlaid with digital maps from the *Canada Land Inventory* showing the extent of dependable agricultural land in Canada. The intersection of the two represents the area of urban land that occupies dependable agricultural land (Statistics Canada, 1997).

**Data limitations:** 1) The definition of an urban enumeration area used in this indicator is taken from the population census. This definition is such that some enumeration areas that are not entirely built-up, or that contain small amounts of agricultural land, are defined as urban. There are few such cases however, and they do not influence the estimates of total urban area by more than 1% or 2%. 2) Some error is inherent in the method used to estimate urban land use in years other than 1991. For example, an apartment building located at the centre of an enumeration area could be given a circular buffer representing several square kilometres, when, in fact, the building occupies only a small fraction of this area. The opposite error is also inherent in the method: a low-density suburban enumeration area might well occupy a larger area than that given it in the calculation. 3) There was some under-coverage of agricultural land when the *Canada Land Inventory* was compiled in the 1960s and 1970s. This was partly because only the southern, populated region of the country was surveyed for the inventory. Although this region includes the vast majority of Canada's dependable agricultural land, small pockets of dependable land outside the region were not captured in the inventory. Under-coverage also resulted from the fact that large urban areas were not surveyed for the inventory. Since many of these cities occupied dependable land at the time, total dependable land is under-estimated by the inventory.

**Reliability:** The estimates of urban land area are of acceptable reliability (class 3). Estimates of urban land occupying dependable agricultural land are also considered acceptable (class 3).

### Related indicators:

*Agricultural Land Use and Supply*

*Environmental Sustainability: Canada's Agricultural Soils*<sup>4</sup>

1. The area of land used for urban purposes in the Yukon Territory and the Northwest Territories (including Nunavut) is not included.

2. Dependable agricultural land is defined as that falling into *Canada Land Inventory* classes 1 through 3. This includes all land that is generally free from severe constraints for crop production. See the indicator of *Agricultural Land Use and Supply* for a more detailed discussion of the evolution of dependable land in Canada.

3. An urban enumeration area is one in which the population is at least 1 000 and has a density of at least 400 persons per square kilometre.

4. Part of Environment Canada's *National Environmental Indicator Series*.





## A.6 Energy Use per Unit of Household Expenditure

**Theme:** Consumption of materials and energy

**Geographic scope:** National

**Time series:** 1981 to 1996

**Frequency of update:** Yearly

**Description:** *Energy Use per Unit of Household Expenditure* measures the quantity of energy used in association with an average \$1 000 of goods and services purchased by Canadian households.

So that the indicator tracks only real changes over time in energy use per unit of household purchases, these purchases are measured in constant (or inflation adjusted) dollars. This eliminates the effect of inflation, which would otherwise tend to push the value of the indicator downward over time.

The indicator captures households' "direct" energy use (energy used for family cars and home heating for example) plus their "indirect" energy use (the energy needed to produce the goods and services that households buy). The indicator includes an estimate of the indirect energy that is used to produce the imported products that Canadian households purchase. In this way, it gives a complete picture of the energy use associated with household expenditures, regardless of the actual user of the energy: households themselves, Canadian industries or industries in other countries.

**Significance:** Few other activities are as important to the economy as the consumption of energy. At the same time, few other activities have as wide-ranging environmental effects:

- changes in land use to accommodate pipelines, power lines and energy production plants;
- disruptions of rivers and lakes for hydroelectric power generation and for cooling purposes at thermal generating stations;
- emissions of enormous quantities of airborne wastes, leading to acid rain, urban smog and the build-up of greenhouse gases in the atmosphere;
- creation of substantial amounts of solid waste, including large quantities of nuclear wastes; and
- contamination of surface and groundwaters with potentially toxic compounds from the refining, delivery, storage and combustion of fossil fuels.

Because energy use is related to so many important environmental issues, its measurement is a key indicator of the overall impact of the economy on the environment.

Putting energy use in the context of household expenditures is helpful because it brings this important aspect of economic activity "close to home." The indicator highlights the fact that, as consumers, Canadians are responsible not only for the energy they use directly in their daily lives, but also indirectly for the energy that is needed to produce the products they purchase.

By linking energy use with household expenditures, the indicator also helps measure Canada's progress toward an environmentally sustainable economy. An important goal for sustainability is keeping the use of natural resources, like energy, within limits that the environment can manage. This suggests that energy use per unit of household expenditure should be at least stable, and preferably declining, over time.

**Method of calculation:** Estimates of energy use per unit of household expenditures are derived by first calculating households' direct plus indirect use of energy in a given year (measured in physical units) and then dividing this total by the value of household expenditures in that year (measured in inflation-adjusted dollars).

Estimates of direct energy use by households are derived from a variety of Statistics Canada sources. Included in these estimates is the energy used around the home for heating, lighting and cooking, the fuel burned in our cars, and the energy needed for various other purposes (motorized equipment and recreational vehicles for example).

Indirect household energy use is estimated using a technique known as input-output analysis. This technique allows estimation of the portion of business' energy use that is associated with the production of goods and services that are purchased by households. The starting point for the indirect household use estimates, energy use by Canadian industries, is derived mainly from Statistics Canada survey sources. These sources cover the most important energy-using industries in the economy; namely, the mining, manufacturing, transportation and electric power industries. Together, these industries account for the majority of business' energy use in Canada. Estimates of the small amount of energy used by industries not included in these surveys are available in monetary units from other Statistics Canada sources.<sup>1</sup> These are converted to physical units by division with average prices.

1. These estimates are taken mainly from the Input-Output Accounts compiled annually by Statistics Canada.





Energy use associated with the imported products purchased by households is also estimated using input-output analysis. To simplify the calculation, it is assumed that the production of our imports requires the same quantity of energy as similar goods made in Canada (Statistics Canada, 1997).

**Data limitations:** This indicator has no significant data limitations.

**Reliability:** The estimates of energy use per unit of household expenditure presented in this indicator are considered to be very reliable (class 1).

**Related indicators:**

*Greenhouse Gas Emissions per Unit of Household Expenditure*

*Water Use per Unit of Household Expenditure*

*Energy Consumption*<sup>1</sup>

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1. Part of Environment Canada's *National Environmental Indicator Series*.



## A.7 Water Use per Unit of Household Expenditure

**Theme:** Consumption of materials and energy

**Geographic scope:** National

**Time series:** 1981, 1986, 1991

**Frequency of update:** Every five years<sup>1</sup>

**Description:** *Water Use per Unit of Household Expenditure* measures the quantity of water withdrawn from the environment in association with an average \$1 000 of goods and services purchased by Canadian households.

So that the indicator tracks only real changes over time in water use per unit of household purchases, these purchases are measured in constant (or inflation-adjusted) dollars. This eliminates the effect of inflation, which would otherwise tend to push the value of the indicator downward over time.

The indicator captures households' "direct" water use (water used for cooking and cleaning for example) plus their "indirect" water use (the water needed to produce the goods and services that households buy). The indicator includes an estimate of the indirect water that is associated with the imported products that Canadian households purchase. In this way, it gives a complete picture of the water use associated with household expenditures, regardless of the actual user of the water: households themselves, Canadian industries or industries in other countries.

**Significance:** Canada is home to many of the world's largest freshwater lakes and rivers. Despite this abundance, much of our fresh water flows northward to the Arctic Ocean, away from the southern areas where demand is greatest. As a result, water availability is occasionally inadequate to meet demand in some regions, especially in the agricultural regions of the Prairies. Measuring water use is therefore important, even for Canada.

Questions of supply aside, measuring water use is important because it serves as an indirect indicator of the pollutant burden on our lakes and rivers. Much water is used by households and businesses simply to carry away sewage and processing wastes. Water use can therefore be taken as an indirect guide to the amount of these wastes produced by economic activity. Treatment of drinking water and sewage are also among the most important ways in which chlorine is released into the environment. And the substantial amount of energy used in the withdrawal,

filtering, treatment and delivery of clean water to households and businesses has its own environmental impacts.<sup>2</sup>

Putting water use in the context of household expenditures is helpful because it brings this important aspect of economic activity "close to home." The indicator highlights the fact that, as consumers, Canadians are responsible not only for the water we use directly in our daily lives, but also indirectly for the water that is needed to produce the products we purchase.

By linking water use with household expenditures, the indicator also helps measure Canada's progress toward an environmentally sustainable economy. An important goal for sustainability is keeping the use of natural resources, like water, within limits that the environment can manage. This suggests that water use per unit of household expenditure should be at least stable, and preferably declining, over time.

**Method of calculation:** Estimates of water use per unit of household expenditures are derived by first calculating households' direct plus indirect water use in a given year (measured in cubic metres) and then dividing this total by the value of household expenditures in that year (measured in inflation-adjusted dollars).

Estimates of direct water use by households are derived mainly from a survey of municipal water utilities (Environment Canada, 1994). Data from this survey are supplemented with estimates of water use in rural households to arrive at the estimate of total direct water use in Canadian households.

Indirect household water use is estimated using a technique known as input-output analysis. This technique allows estimation of the portion of business' water use that is associated with the production of goods and services that households purchase. The starting point for the indirect household use estimate, water use by Canadian businesses, is derived mainly from a survey of water consumption in the mining, manufacturing and thermal electric power industries. This survey is conducted jointly by Environment Canada and Statistics Canada every five years (Tate and Scharf, 1995). The vast majority of industrial water use is captured in the survey. Estimates of water use for industries not included in the survey are made by combining data from a wide variety of non-survey sources, such as water audits and water-use forecasting models.

Water use associated with the imported products purchased by households is also estimated using input-output analysis. To simplify the calculation, it is assumed that the production of our imports requires the same

1. This indicator will be updated annually once suitable data sources and methods are identified.

2. See *Energy Use per Unit of Household Expenditure* for a discussion of these impacts.



quantity of water as similar goods made in Canada (Statistics Canada, 1997).

**Data limitations:** Estimates for most uses of water by households and industries are obtained directly from survey sources. These estimates are generally of high quality. Slightly more than 13% of water use in Canada is estimated using non-survey sources however. The quality of these sources varies significantly. Many of the estimates based on non-survey sources are subject to a substantial degree of error.

**Reliability:** The estimates of water use per unit of household expenditure are considered to be reliable (class 2).

**Related indicators:**

*Greenhouse Gas Emissions per Unit of Household Expenditure*

*Energy Use per Unit of Household Expenditure*

*Municipal Water Use and Wastewater Treatment*<sup>1</sup>

1. Part of Environment Canada's *National Environmental Indicator Series*.





## A.8 Greenhouse Gas Emissions per Unit of Household Expenditure

**Theme:** Waste Production

**Geographic scope:** National

**Time series:** 1981 to 1996

**Frequency of update:** Yearly

**Description:** *Greenhouse Gas Emissions per Unit of Household Expenditure* measures the quantity of carbon dioxide, methane and nitrous oxide emitted in association with an average \$1 000 of goods and services purchased by Canadian households. Emissions of these gases are weighted, added together and reported in terms of a single measure called "carbon dioxide equivalent emissions."

So that the indicator tracks only real changes over time in carbon dioxide equivalent emissions per unit of household expenditure, expenditures are measured in constant (or inflation-adjusted) dollars. This eliminates the effect of inflation, which would otherwise tend to push the value of the indicator downward over time.

The indicator captures households' "direct" greenhouse gas emissions (those that come from private cars and home heating for example) plus their "indirect" emissions (those associated with the production of the goods and services that households purchase). The indicator includes an estimate of the indirect greenhouse gas emissions that are associated with the imported goods and services that Canadian households purchase. In this way, it gives a complete picture of the greenhouse gas emissions associated with household expenditures, regardless of the source of the emissions: households themselves, Canadian industries, or industries in other countries.

**Significance:** Household greenhouse gas emissions contribute to the build-up of greenhouse gases in the atmosphere. Most scientists predict that this build-up will lead to an increase in the planet's temperature, or global warming, in the coming decades. While the effects of global warming are still uncertain, possibilities include flooding of coastlines from rising ocean waters; increased occurrences of severe storms, droughts, heat waves and other extreme weather events; and rapid changes in plant and animal habitat due to changes in weather patterns.

Putting greenhouse gas emissions in the context of household expenditures is helpful because it brings this important consequence of economic activity "close to home." The indicator highlights the fact that, as consumers, Canadians are responsible not only for the greenhouse gas emissions that result directly from their daily activities, but also indirectly for the emissions arising from the

production of the goods and services that they buy every day.

By linking greenhouse gas emissions with household expenditures, the indicator also helps to measure Canada's progress toward an environmentally sustainable economy. An important goal for sustainability is keeping the releases of wastes, like greenhouse gases, within limits that the environment can manage. This suggests that greenhouse gas emissions per unit of household expenditure should be at least stable, and preferably declining, over time.

**Method of calculation:** Annual estimates of greenhouse gas emissions per unit of household expenditure are derived by first estimating households' direct and indirect emissions of carbon dioxide, methane and nitrous oxide in a given year and then converting this total to carbon dioxide equivalent emissions. This figure is then divided by the value of household expenditures in that year (measured in inflation-adjusted dollars).

Estimates of direct greenhouse gas emissions from households are made by multiplying the quantities of different fossil fuels used by households by appropriate emission coefficients. These emission coefficients, which are developed by Environment Canada (Jaques, 1992), measure how much of a given greenhouse gas, carbon dioxide for example, is released when a set amount of fossil fuel is burned.

Indirect household emissions are estimated using a technique known as input-output analysis. This technique allows estimation of the portion of business' greenhouse gas emissions that is associated with the production of the goods and services purchased by households. Estimates of business' emissions are made for the following sources: fossil fuel combustion (both for heat and transportation); non-combustion uses of fossil fuels; manufacturing processes;<sup>1</sup> and agricultural activities. The methods used to estimate the emissions from these sources are also adopted from Environment Canada (Jaques, 1992).

Greenhouse gas emissions associated with the imported products purchased by households are also estimated using input-output analysis. To simplify the calculation, it is assumed that the production of these products results in the same quantity of greenhouse gas emissions as similar goods made in Canada.

Carbon dioxide equivalent emissions are estimated by converting methane and nitrous oxide emissions to carbon dioxide equivalents using a weighting index known as global warming potential (Houghton *et al.*, 1996). Global warming potential measures the global warming impact of each gas relative to carbon dioxide. Methane has a global warming potential of 21; that is, every tonne of methane released to the atmosphere is the equivalent of 21 tonnes of

1. Cement, lime, ammonia and natural gas production, for example.



carbon dioxide. Nitrous oxide has a global warming potential of 310 (Statistics Canada, 1997).

**Data limitations:** 1) Although the majority of carbon dioxide, methane and nitrous oxide emissions associated with household expenditure are captured in the indicator, some emissions cannot be estimated using available data and methods. The most important of these missing sources is methane emissions from landfill sites; no means is yet available to determine the share of these emissions attributable to households. 2) The data and methods used to estimate methane and nitrous oxide emissions are at an early stage of development. The emission estimates for these two gases are, therefore, subject to uncertainty.

**Reliability:** The estimates of carbon dioxide equivalent emissions per unit of household expenditure presented in this indicator are considered to be reliable (class 2).

**Related indicators:**

*Water Use per Unit of Household Expenditure*

*Energy Use per unit of Household Expenditure*

*Climate Change<sup>1</sup>*

*Energy Consumption<sup>2</sup>*

1. Part of Environment Canada's *National Environmental Indicator Series*.



## A.9 Environmental Protection Expenditures in the Business Sector

**Theme:** Environmental protection expenditures

**Geographic scope:** National, provincial, territorial

**Time series:** Variable

**Frequency of update:** Yearly

**Description:** *Environmental Protection Expenditures in the Business Sector* measures current (operating) and capital and repairs (investment) expenditures made to prevent, abate or control pollution and other causes of environmental degradation. These expenditures are defined as those made to comply with Canadian and international environmental regulations and conventions<sup>1</sup> that apply in Canada.<sup>2</sup> They are split into the following groups:

- **Pollution abatement and control (PAC) expenditures:** purchases of solid waste and sewage management services; outlays on environmental monitoring; and expenditures on machinery, equipment, buildings and infrastructure intended for PAC purposes. PAC expenditures can be for “end-of-pipe” systems that treat pollution after it has been created, or for pollution prevention, such as modifications to production processes so that less pollution is created in the first place (“PAC integrated processes”).
- **Other environmental protection expenditures:** site reclamation and decommissioning; environmental assessments and audits; wildlife and habitat protection; fees, fines and licences; and “other” expenditures (e.g., for the administration of environmental projects).

**Significance:** Environmental protection expenditures are one response of businesses to the environmental effects of their activities. They serve to identify the types of environmental projects favoured by businesses and how these change over time. This indicator also measures the financial burden imposed on businesses by environmental regulations and conventions.

**Method of calculation:** Estimates of business capital and repairs expenditures on pollution abatement and control

1. For example, the Accelerated Reduction/Elimination of Toxics (ARET) program, the Voluntary Challenge and Registry on Climate Change (VCR) and its Quebec equivalent Éco-Geste, and the Canada–U.S. Air Quality Accord.

2. This definition applies to data since 1994 only. In earlier years, companies were allowed to determine for themselves which of their expenditures they considered to be for pollution abatement and control.

between 1985 and 1993 are derived from the *Capital and Repairs Expenditure Survey*. That survey provides statistics on investment expenditures for the following assets: construction of waste collection and disposal facilities, construction of sewage systems, construction of other facilities for PAC, PAC equipment and sanitation equipment.

Since 1994, estimates of environmental expenditures (for PAC or other activities) have been derived from the *Survey of Environmental Protection Expenditures (SEPE)* for most industries, namely the primary industries (logging, mining, crude petroleum and natural gas, including pipeline transportation), manufacturing and energy utilities (electric power and natural gas distribution). Since the SEPE does not cover wholesale and retail trade or services, an estimate of these expenditures is obtained from the *Capital and Repairs Expenditure Survey*.<sup>3</sup>

**Data limitations:** 1) The data likely underestimate environmental expenditures in the business sector, particularly those with multiple objectives of which only one is environmental protection (for example, energy conservation programs do not necessarily entail specific environmental expenditures, even though there is a definite environmental benefit). Also, the estimates do not represent the net cost of environmental protection, but rather the gross cost (for example, savings realized as a result of energy conservation were not subtracted from expenditures because of a lack of information). 2) The data on capital and repairs expenditures between 1985 and 1993 capture only major investments in PAC facilities and equipment. 3) Any comparison of investment expenditures between the period 1985 to 1993 and the period since 1994 must be made with caution, since the estimates are taken from two different surveys. 4) No data are available for operating expenditures on environmental protection prior to 1994 (except those from a pilot survey conducted in 1989). 5) No data are available for depreciation and holding costs on the capital stock employed for environmental protection.

**Reliability:** Data from the *Survey of Environmental Protection Expenditures* are considered to be very reliable (class 1). Data from the *Capital and Repairs Expenditure Survey* are considered to be reliable (class 2).

### Related indicator:

*Pollution Abatement and Control Expenditures in the Government Sector*

3. No estimate is available for the agriculture, fishing and aquaculture industries.





## A.10 Pollution Abatement and Control Expenditures in the Government Sector

**Theme:** Environmental Protection Expenditures

**Geographic scope:** National, provincial, territorial

**Time series:** Variable

**Frequency of update:** Yearly

**Description:** *Pollution Abatement and Control (PAC) Expenditures in the Government Sector* measures the current (operating) and capital and repairs (investment) expenditures made by the federal, provincial/territorial and local governments in order to prevent or abate pollution. Expenditures are split into the following groups:

- **Consolidated total expenditures on PAC** (current plus capital and repairs) for all three levels of government, from which inter-governmental transfers have been excluded;
- **Non-consolidated total expenditures on PAC** (current plus capital and repairs) for each level of government;
- **Capital and repairs expenditures** for each level of government.

Current and capital and repairs expenditures include the following categories:

- **Expenditures for sewage collection and disposal:** expenditures associated with sewage management, sewer inspection and cleaning, and assistance and research grants.
- **Expenditures for waste collection and disposal:** expenditures associated with waste management, management of waste disposal, elimination and treatment programs, and assistance and research grants.
- **Expenditures for other pollution control activities:** expenditures associated with the construction, installation and operation of cleanup equipment other than solid waste and sewage treatment facilities; management of programs to prevent or abate pollution of the air, water (including underground water) and soil; and assistance and research grants.
- **Expenditures for other environmental services (not classified elsewhere):** expenditures associated with services such as environmental assessments, administration of the environment department, education, and wildlife and habitat protection.

**Significance:** Pollution abatement and control expenditures represent one response of governments to the environmental effects of economic and human activity.

**Method of calculation:** Estimates of total PAC expenditures for the federal and provincial/territorial governments are derived from public accounts data provided by the Public Institutions Division. Estimates of capital-and-repair expenditures by type of asset for these two levels of government are based on the results of the *Capital and Repairs Expenditure Survey*. For local governments, estimates are based on information from two surveys: the *Local Government – Current Revenue and Expenditure Survey* and the *Local Government – Capital and Repairs Expenditure Survey*. These survey data are then validated using the financial report of the municipal affairs department in each province/territory. The data correspond to the fiscal year that ended on the date closest to March 31, except for local government data (calendar year). Consolidation of expenditures is carried out by netting inter-government transfer payments from the expenditures of all three levels of government.

**Data limitations:** 1) Data from 1988 onward have been subjected to a historical revision. Therefore caution should be exercised in any comparison with earlier data. 2) The available data on inter-government transfer payments (for PAC) do not allow for the elimination of all transfers by local governments to other levels of government (a negligible amount); such expenditures are therefore double-counted. 3) Estimates of capital and repairs expenditures of the federal and provincial/territorial governments capture only major investments in large PAC facilities. 4) It is likely that some government expenditures on sewage management are reported as drinking water treatment and supply expenditures (with the result that these expenditures are underestimated). 5) The data do not allow for distinguishing between activities funded by governments but carried out by another agent (financing principle) and activities actually carried out by governments (abater principle).

**Reliability:** Data on the expenditures of local governments are considered to be very reliable (class 1), those on the federal government are considered to be reliable (class 2), while data on the provincial and territorial governments are considered to be acceptable (class 3). Overall, estimates of consolidated PAC expenditures of governments are considered to be reliable (class 2).

**Related indicator:**

*Environmental Protection Expenditures in the Business Sector*



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*Annex B*  
*Detailed Statistics*





## B.1 Natural Resource Stocks<sup>1</sup>

### Energy resources – monetary data

Table B.1.1

#### Value of Established Natural Gas Reserves in Canada, 1961-1997 <sup>✱</sup>

Year	Closing stock		Present value	Reconciliation account <sup>1</sup>				Closing stock
	Net price I	Net price II		Opening stock	Additions	Depletion	Revaluation	
	million dollars							
1961	50.8	2 481.7	836.5	..	..	..	..	836.5
1962	37.0	2 662.5	1 113.7	836.5	52.4	27.8	252.6	1 113.7
1963	42.4	3 091.7	1 357.0	1 113.7	66.3	33.0	210.0	1 357.0
1964	45.1	3 573.3	1 644.1	1 357.0	119.2	37.5	205.4	1 644.1
1965	51.1	3 900.5	1 851.4	1 644.1	143.6	44.3	107.9	1 851.4
1966	26.6	4 334.9	2 102.5	1 851.4	92.3	51.6	210.5	2 102.5
1967	36.9	4 304.6	2 138.8	2 102.5	147.3	54.8	-56.1	2 138.8
1968	7.6	4 682.2	2 337.6	2 138.8	224.8	60.6	34.6	2 337.6
1969	-	4 711.3	2 589.5	2 337.6	183.2	78.9	147.5	2 589.5
1970	-	4 743.4	2 666.2	2 589.5	119.1	84.6	42.2	2 666.2
1971	-	3 845.2	2 350.3	2 666.2	89.4	89.0	-321.5	2 345.0
1972	-	3 679.2	2 331.8	2 345.0	96.9	93.4	-56.5	2 292.1
1973	4 185.7	8 611.5	5 404.5	2 292.1	683.9	216.6	2 579.1	5 338.5
1974	14 119.5	20 556.9	12 649.6	5 338.5	1 177.1	486.0	6 528.8	12 558.3
1975	34 011.7	40 469.3	25 098.3	12 558.3	245.4	986.4	13 238.0	25 055.4
1976	53 661.9	66 913.7	40 489.3	25 055.4	2 949.6	1 508.7	13 963.7	40 459.9
1977	55 311.9	66 621.1	41 423.2	40 459.9	3 038.6	1 644.7	-432.5	41 421.3
1978	64 899.2	81 055.2	50 577.3	41 421.3	4 984.7	2 016.4	6 187.8	50 577.3
1979	81 044.2	100 167.9	63 276.9	50 577.3	4 674.3	2 602.6	10 515.0	63 164.0
1980	144 600.6	182 416.4	109 335.2	63 164.0	6 069.8	3 964.8	43 945.4	109 214.4
1981	153 101.4	204 326.2	124 474.6	109 214.4	8 044.9	4 704.8	11 882.0	124 436.4
1982	161 552.4	223 443.7	127 323.0	124 436.4	7 998.1	4 152.9	-958.6	127 323.0
1983	182 582.1	252 804.7	150 030.4	127 323.0	3 191.2	5 359.8	24 843.2	149 997.7
1984	165 182.5	230 715.2	139 825.2	149 997.7	3 253.4	5 237.1	-8 188.7	139 825.2
1985	149 761.6	211 392.8	132 270.6	139 825.2	3 329.4	5 376.7	-5 507.4	132 270.6
1986	76 814.6	146 563.0	91 093.1	132 270.6	1 253.0	3 622.9	-38 807.7	91 093.1
1987	36 486.8	96 295.7	60 643.7	91 093.1	67.9	2 479.6	-28 037.6	60 643.7
1988	26 729.5	76 260.4	52 827.3	60 643.7	2 090.0	2 823.2	-7 083.1	52 827.3
1989	21 292.7	70 978.9	48 902.9	52 827.3	3 208.7	2 556.7	-4 659.5	48 819.8
1990	35 055.0	85 336.8	59 800.5	48 819.8	3 647.2	3 299.3	10 613.6	59 781.2
1991	17 290.8	64 453.9	43 528.4	59 781.2	1 766.4	2 155.4	-15 936.0	43 456.2
1992	24 946.8	64 256.2	47 308.6	43 456.2	2 174.3	3 085.7	4 516.4	47 061.2
1993	48 416.9	80 508.1	62 823.3	47 061.2	2 335.5	4 824.9	18 002.5	62 574.3
1994	61 942.7	91 131.2	70 332.1	62 574.3	4 325.0	5 529.6	8 859.8	70 229.5
1995	28 792.4	54 932.4	42 905.3	70 229.5	3 639.3	3 551.3	-27 591.2	42 726.2
1996	59 083.1	81 273.6	65 071.8	42 726.2	1 149.8	6 095.0	27 022.4	64 803.5
1997	69 013.9	87 880.3	71 429.8	64 803.5	2 247.8	7 257.6	11 464.2	71 257.9

**Notes:**

Negative values for Net price I are set to zero.

1. The reconciliation account entries are calculated using the present value methodology.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.

1. The symbol <sup>✱</sup> beside a table title name indicates that there is more data associated with this table on the CD-ROM included with this publication.



Table B.1.2

**Value of Established Crude Oil Reserves in Canada, 1961-1997 \***

Year	Closing stock		Present value	Opening stock	Reconciliation account <sup>1</sup>			Closing stock
	Net price I	Net price II			Additions	Depletion	Revaluation	
	million dollars							
1961	4 337.9	6 646.6	4 524.1	..	..	..	..	4 524.1
1962	4 286.9	6 744.6	4 631.5	4 524.1	440.1	245.2	-87.5	4 631.5
1963	5 077.0	7 894.4	5 406.7	4 631.5	584.3	281.6	472.5	5 406.7
1964	7 183.3	12 348.5	8 347.8	5 406.7	2 788.8	325.8	478.1	8 347.8
1965	7 057.6	12 747.3	7 544.0	8 347.8	634.8	307.2	-1 131.4	7 544.0
1966	8 006.2	14 404.6	8 683.4	7 544.0	1 182.7	341.3	298.1	8 683.4
1967	8 947.9	15 300.1	9 294.9	8 683.4	745.8	383.4	249.2	9 294.9
1968	9 785.0	16 297.0	10 006.1	9 294.9	978.2	413.5	146.5	10 006.1
1969	10 085.8	16 281.8	10 132.2	10 006.1	449.3	444.0	120.8	10 132.2
1970	11 215.6	16 503.2	10 808.4	10 132.2	392.7	529.7	813.2	10 808.4
1971	12 385.9	17 512.2	11 869.9	10 808.4	270.4	641.1	1 432.2	11 869.9
1972	12 846.7	16 765.2	12 066.8	11 869.9	218.5	774.8	753.3	12 066.8
1973	17 509.2	20 233.2	15 504.8	12 066.8	235.4	1 267.7	4 470.4	15 504.8
1974	31 807.4	35 258.8	27 084.4	15 504.8	1 006.8	2 172.0	12 744.7	27 084.4
1975	36 450.2	41 449.8	30 902.3	27 084.4	277.6	2 231.7	5 772.1	30 902.3
1976	38 652.7	43 998.9	32 521.7	30 902.3	-552.5	2 331.7	4 503.6	32 521.7
1977	46 981.4	52 263.4	39 432.0	32 521.7	1 093.3	2 963.7	8 780.6	39 432.0
1978	55 664.3	61 228.4	46 527.3	39 432.0	2 161.9	3 565.1	8 498.5	46 527.3
1979	57 152.8	61 713.1	48 594.8	46 527.3	2 215.1	4 348.6	4 201.1	48 594.8
1980	62 249.1	67 607.4	52 875.8	48 594.8	1 955.2	4 624.8	6 950.7	52 875.8
1981	71 257.6	78 677.1	60 650.2	52 875.8	2 554.5	4 885.5	10 105.4	60 650.2
1982	90 594.4	98 568.8	75 913.0	60 650.2	1 597.7	6 268.5	19 933.5	75 913.0
1983	124 044.5	132 109.4	104 163.4	75 913.0	10 454.3	8 928.3	26 724.5	104 163.4
1984	126 789.2	133 244.1	106 293.3	104 163.4	7 706.8	9 982.1	4 405.2	106 293.3
1985	126 428.8	135 145.8	107 348.9	106 293.3	11 444.3	9 571.5	-817.1	107 348.9
1986	39 790.1	51 547.4	40 430.6	107 348.9	2 651.0	3 500.9	-66 073.8	40 425.3
1987	55 163.7	65 961.5	52 168.3	40 425.3	3 253.6	4 746.2	13 225.3	52 158.1
1988	22 628.8	32 801.8	26 317.6	52 158.1	1 900.4	2 560.9	-25 191.9	26 305.7
1989	30 030.7	41 971.7	33 515.3	26 305.7	1 693.5	3 234.9	8 751.0	33 515.3
1990	40 681.4	51 666.2	41 612.7	33 515.3	1 058.5	4 322.5	11 361.4	41 612.7
1991	17 904.5	27 812.7	22 614.0	41 612.7	855.8	2 453.3	-17 401.1	22 614.0
1992	19 950.1	28 346.1	23 475.9	22 614.0	1 839.0	2 766.6	1 789.4	23 475.9
1993	18 948.9	26 236.9	21 955.9	23 475.9	2 480.6	2 717.0	-1 283.7	21 955.9
1994	19 662.3	23 954.3	20 212.2	21 955.9	1 821.1	2 801.6	-763.1	20 212.2
1995	25 415.4	29 592.2	25 230.1	20 212.2	3 980.5	3 492.9	4 530.3	25 230.1
1996	37 887.8	40 214.4	34 366.6	25 230.1	5 583.2	5 090.1	8 643.3	34 366.6
1997	25 336.3	26 585.6	22 776.6	34 366.6	4 529.1	3 341.3	-12 777.7	22 776.6

**Note:**

1. The reconciliation account entries are calculated using the present value methodology.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.



Table B.1.3

## Value of Recoverable Subbituminous Coal and Lignite Reserves in Canada, 1976-1997 \*

Year	Closing stock		Present value	Opening stock	Reconciliation account <sup>1</sup>			Closing stock
	Net price I	Net price II			Additions	Depletion	Revaluation	
	million dollars							
1976	7 147.2	7 843.6	719.5	674.1	3.6	3.6	45.4	719.5
1977	7 077.9	7 808.3	822.6	719.5	-49.8	4.5	157.5	822.6
1978	7 129.1	7 955.9	921.2	822.6	4.8	6.2	99.9	921.2
1979	9 630.2	10 564.7	1 316.1	921.2	8.8	10.5	396.6	1 316.1
1980	12 035.1	13 122.9	1 768.9	1 316.1	155.9	13.2	310.1	1 768.9
1981	17 088.5	18 188.3	2 645.9	1 768.9	15.3	20.9	882.7	2 645.9
1982	20 781.6	22 011.6	3 595.9	2 645.9	-5.3	32.9	988.2	3 595.9
1983	22 101.6	23 444.1	4 012.9	3 595.9	-11.8	40.5	469.3	4 012.9
1984	25 562.1	27 058.2	5 346.1	4 012.9	-11.4	56.9	1 401.4	5 346.1
1985	22 569.2	24 050.8	4 966.7	5 346.1	18.2	60.0	-337.6	4 966.7
1986	19 453.3	20 925.1	3 921.3	4 966.7	16.1	47.6	-1 014.0	3 921.3
1987	19 591.0	21 313.8	4 488.9	3 921.3	656.3	47.8	-40.7	4 488.9
1988	20 357.0	21 852.8	5 068.8	4 488.9	34.1	56.3	602.1	5 068.8
1989	11 573.9	12 929.6	3 479.1	5 068.8	1.8	48.7	-1 542.8	3 479.1
1990	16 115.9	17 406.2	4 100.5	3 479.1	86.6	53.5	588.3	4 100.5
1991	16 774.8	18 030.1	4 517.4	4 100.5	56.6	64.7	425.0	4 517.4
1992	15 242.6	16 527.5	4 536.1	4 517.4	-228.4	72.9	320.0	4 536.1
1993	16 957.8	18 568.8	4 998.6	4 536.1	1.9	81.4	542.0	4 998.6
1994	19 073.8	21 066.3	6 006.5	4 998.6	-1.8	106.8	1 116.5	6 006.5
1995	15 425.8	17 738.1	5 156.5	6 006.5	2.0	94.6	-757.3	5 156.5
1996	13 281.9	15 789.4	4 653.3	5 156.5	-3.0	85.9	-414.3	4 653.3
1997	13 184.7	15 738.3	4 853.1	4 653.3	-	93.8	293.6	4 853.1

**Note:**

1. The reconciliation account entries are calculated using the present value methodology.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.

Table B.1.4

## Value of Recoverable Bituminous Coal Reserves in Canada, 1976-1997 \*

Year	Closing stock			Reconciliation account <sup>1</sup>				Closing stock
	Net price I	Net price II	Present value	Opening stock	Additions	Depletion	Revaluation	
				million dollars				
1976	16 851.9	39 206.8	8 111.5	8 628.5	-10.7	72.6	-433.7	8 111.5
1977	14 505.6	37 730.8	8 477.3	8 111.5	-5.9	87.0	458.8	8 477.3
1978	16 914.6	40 402.9	9 936.1	8 477.3	-12.7	108.9	1 580.3	9 936.1
1979	13 336.6	36 856.7	10 576.2	9 936.1	-219.8	133.1	992.9	10 576.2
1980	4 028.1	27 449.1	8 164.9	10 576.2	199.3	114.6	-2 495.9	8 164.9
1981	2 231.9	27 704.6	8 913.9	8 164.9	-17.0	128.0	894.0	8 913.9
1982	5 286.0	65 225.0	11 176.9	8 913.9	4 796.8	92.0	-2 441.9	11 176.9
1983	12 989.1	83 523.8	13 806.4	11 176.9	1 860.9	99.9	868.4	13 806.4
1984	18 111.9	92 669.6	20 523.7	13 806.4	865.5	193.0	6 044.8	20 523.7
1985	6 084.2	78 706.2	18 640.8	20 523.7	-321.1	192.0	-1 369.8	18 640.8
1986	1 428.7	80 481.2	16 937.4	18 640.8	984.8	159.1	-2 529.1	16 937.4
1987	4 904.5	74 570.2	15 962.9	16 937.4	-121.3	155.0	-698.2	15 962.9
1988	4 336.2	70 660.5	18 246.2	15 962.9	29.5	209.0	2 462.8	18 246.2
1989	1 923.9	52 602.9	13 406.4	18 246.2	-0.1	151.6	-4 688.1	13 406.4
1990	6 452.6	68 751.7	17 014.8	13 406.4	317.8	191.0	3 481.6	17 014.8
1991	14 090.1	63 868.7	16 281.9	17 014.8	253.9	180.7	-806.1	16 281.9
1992	12 018.7	58 234.5	12 401.3	16 281.9	358.8	109.0	-4 130.3	12 401.3
1993	12 783.0	69 153.9	16 406.5	12 401.3	-12.3	162.3	4 179.7	16 406.5
1994	6 220.3	49 645.7	12 208.0	16 406.5	-7.5	129.7	-4 061.2	12 208.0
1995	4 700.8	54 261.5	14 349.9	12 208.0	-7.8	168.3	2 317.9	14 349.9
1996	9 527.1	55 210.8	15 720.6	14 349.9	-11.4	198.4	1 580.5	15 720.6
1997	8 445.6	48 495.0	14 906.0	15 720.6	-	215.1	-599.5	14 906.0

**Note:**

1. The reconciliation account entries are calculated using the present value methodology.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.





Table B.1.5

**Value of Established Crude Bitumen Reserves in Canada, 1967-1997**

Year	Closing stock			Opening stock	Reconciliation account <sup>1</sup>			Closing stock
	Net price I	Net price II	Present value		Additions	Depletion	Revaluation	
million dollars								
1967	-	249.9	14.0	..	..	..	..	14.0
1968	-	639.5	125.4	14.0	-	1.0	112.4	125.4
1969	-	-	-	125.4	-	-2.5	-318.8	-190.9
1970	-	-	-	-190.9	-	-1.9	60.7	-128.3
1971	-	-	-	-128.3	-	-1.3	57.9	-69.0
1972	-	352.3	171.1	-69.0	0.1	4.1	244.1	171.1
1973	-	539.8	257.8	171.1	-	6.1	92.7	257.8
1974	-	1 445.3	676.9	257.8	-	15.5	434.6	676.9
1975	-	1 036.9	465.6	676.9	-	10.0	-201.3	465.6
1976	-	1 569.8	780.7	465.6	0.5	19.7	334.2	780.7
1977	-	-	-	780.7	760.9	-71.7	-3 956.9	-2 343.7
1978	-	-	-	-2 343.7	-5 154.3	-112.7	-322.1	-7 707.5
1979	-	-	-	-7 707.5	-33.4	-6.3	7 432.2	-302.3
1980	14 922.5	24 076.7	13 360.8	-302.3	-356.1	412.1	14 431.4	13 360.8
1981	4 407.8	16 646.7	8 675.3	13 360.8	-	237.6	-4 447.9	8 675.3
1982	12 729.0	25 707.4	14 012.2	8 675.3	-	417.3	5 754.3	14 012.2
1983	14 280.6	20 469.5	14 410.5	14 012.2	561.7	803.2	639.7	14 410.5
1984	10 883.3	23 482.2	13 897.3	14 410.5	1 268.0	490.3	-1 290.9	13 897.3
1985	10 735.6	21 591.8	14 112.0	13 897.3	1 232.8	632.9	-385.3	14 112.0
1986	-	11 640.8	6 668.3	14 112.0	2 901.1	219.4	-10 125.4	6 668.3
1987	9 022.6	26 351.9	15 561.2	6 668.3	494.7	546.3	8 944.5	15 561.2
1988	-	4 569.0	2 787.1	15 561.2	75.8	105.3	-12 744.6	2 787.1
1989	-	13 898.9	8 922.6	2 787.1	-18.1	381.8	6 535.4	8 922.6
1990	14 363.6	29 444.4	18 993.0	8 922.6	163.1	822.8	10 730.1	18 993.0
1991	1 442.9	15 440.0	10 108.2	18 993.0	6.0	455.3	-8 435.6	10 108.2
1992	2 513.2	15 105.0	10 218.6	10 108.2	91.1	504.4	523.7	10 218.6
1993	1 828.0	12 771.4	8 889.1	10 218.6	-	477.9	-851.6	8 889.1
1994	4 189.2	18 791.2	12 029.1	8 889.1	2 797.6	511.0	853.4	12 029.1
1995	12 432.9	24 604.7	16 618.5	12 029.1	1 077.0	816.4	4 328.8	16 618.5
1996	21 967.0	36 958.2	23 668.7	16 618.5	4 115.5	1 006.5	3 941.2	23 668.7
1997	27 301.8	39 538.1	27 490.3	23 668.7	-622.3	1 473.0	5 917.0	27 490.3

**Notes:**

Negative values for Net price I, Net price II and Present value are set to zero.

1. The reconciliation account entries are calculated using the present value methodology.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.



## Mineral resources – monetary data

Table B.1.6

### Value of Proven and Probable Potash Reserves in Canada, 1976-1997

Year	Closing stock		Present value	Reconciliation account <sup>1</sup>				Closing stock
	Net price I	Net price II		Opening stock million dollars	Additions	Depletion	Revaluation	
1976	34 469.7	55 102.1	5 525.1	7 492.2	22.2	22.2	-1 967.1	5 525.1
1977	36 915.6	57 122.3	6 329.8	5 525.1	28.1	28.1	804.7	6 329.8
1978	42 815.0	62 591.8	7 633.7	6 329.8	37.3	37.3	1 303.9	7 633.7
1979	74 019.7	93 670.3	12 733.3	7 633.7	69.3	69.3	5 099.6	12 733.3
1980	118 598.6	139 394.1	19 287.2	12 733.3	106.8	106.8	6 553.8	19 287.2
1981	114 228.4	142 206.0	17 902.3	19 287.2	90.2	90.2	-1 384.9	17 902.3
1982	35 553.1	79 352.8	8 101.1	17 902.3	33.1	33.1	-9 801.2	8 101.1
1983	18 590.6	59 426.1	7 190.7	8 101.1	34.8	34.8	-910.4	7 190.7
1984	61 947.1	100 625.4	14 548.9	7 190.7	84.2	84.2	7 358.2	14 548.9
1985	-	45 873.1	5 873.4	14 548.9	30.1	30.1	-8 675.5	5 873.4
1986	-	34 213.1	4 440.1	5 873.4	23.1	23.1	-1 433.3	4 440.1
1987	4 478.0	53 335.9	7 854.8	4 440.1	46.3	46.3	3 414.7	7 854.8
1988	66 741.6	119 182.2	16 184.9	7 854.8	2 246.0	88.0	6 172.1	16 184.9
1989	272 900.8	453 310.6	18 065.5	16 184.9	11 935.6	28.8	-10 026.3	18 065.5
1990	200 633.8	369 033.1	15 400.8	18 065.5	25.7	25.7	-2 664.6	15 400.8
1991	226 016.8	387 807.7	15 615.9	15 400.8	25.2	25.2	215.0	15 615.9
1992	275 836.6	425 508.8	17 020.4	15 615.9	27.2	27.2	1 404.5	17 020.4
1993	255 529.7	400 081.7	15 639.6	17 020.4	24.5	24.5	-1 380.8	15 639.6
1994	339 206.4	449 855.3	21 769.4	15 639.6	42.1	42.1	6 129.9	21 769.4
1995	413 342.2	513 095.0	25 815.1	21 769.4	52.0	52.0	4 045.7	25 815.1
1996	367 689.1	469 875.6	21 678.4	25 815.1	40.0	40.0	-4 136.7	21 678.4
1997	443 285.6	531 440.2	27 885.5	21 678.4	58.5	58.5	6 207.2	27 885.5

**Notes:**

Negative values for Net price I are set to zero.

1. The reconciliation account entries are calculated using the present value methodology.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.



Table B.1.7

## Value of Proven and Probable Gold Reserves from Gold Mines in Canada, 1979-1997

Year	Closing stock			Reconciliation account <sup>1</sup>				Closing stock
	Net price I	Net price II	Present value	Opening stock	Additions	Depletion	Revaluation	
	million dollars							
1979	-	-	-	-1 627.4	-374.7	-198.2	663.8	-1 140.1
1980	823.9	3 511.2	2 317.4	-1 140.1	1 400.4	146.9	2 152.2	2 265.6
1981	-	1 499.3	1 128.4	2 265.6	137.5	65.6	-1 419.7	917.8
1982	-	515.3	395.0	917.8	14.5	-50.0	-988.5	-6.2
1983	17.3	3 883.6	2 458.1	-6.2	1 375.4	22.1	845.1	2 192.3
1984	99.6	2 341.1	1 497.6	2 192.3	201.8	-77.7	-1 437.6	1 034.1
1985	-	2 934.2	1 824.6	1 034.1	265.6	-23.0	-194.6	1 128.2
1986	1 304.3	5 670.8	3 961.8	1 128.2	589.8	221.9	2 384.9	3 880.9
1987	4 710.7	9 660.1	6 962.6	3 880.9	1 345.4	430.7	2 081.3	6 876.9
1988	2 913.7	7 975.5	5 908.9	6 877.7	912.1	359.1	-2 005.5	5 425.2
1989	2 053.4	4 181.5	3 356.5	5 425.2	-56.6	226.7	-2 251.5	2 890.5
1990	2 480.2	4 570.7	3 755.1	2 890.5	77.4	319.0	555.8	3 204.6
1991	1 810.1	3 591.2	2 957.6	3 204.6	685.7	79.9	-1 430.3	2 380.1
1992	1 226.6	2 825.9	2 340.0	2 380.1	-74.9	96.8	-375.5	1 832.9
1993	3 208.7	6 606.8	5 259.1	1 832.9	1 361.9	399.0	2 248.1	5 044.0
1994	4 120.0	7 693.1	6 175.2	5 044.0	68.4	490.1	1 291.5	5 913.8
1995	2 940.2	7 076.0	5 569.4	5 913.8	587.2	429.2	-585.2	5 486.6
1996	4 508.2	8 050.8	6 480.3	5 486.6	812.3	563.4	663.0	6 398.5
1997	2 174.9	3 582.3	2 969.2	6 398.5	-407.8	-7.2	-3 651.7	2 346.1

## Notes:

Negative values for Net price I, Net price II and Present value are set to zero.

1. The reconciliation account entries are calculated using the present value methodology.

## Source:

Statistics Canada, Environment Accounts and Statistics Division.

Table B.1.8

## Value of Proven and Probable Iron Reserves in Canada, 1976-1997

Year	Closing stock		Present value	Reconciliation account <sup>1</sup>				Closing stock
	Net price I	Net price II		Opening stock	Additions	Depletion	Revaluation	
	million dollars							
1976	45 745.9	54 601.8	13 448.0	10 130.5	135.2	135.2	3 317.5	13 448.0
1977	52 831.7	63 221.3	15 104.6	13 448.0	147.0	147.0	1 656.6	15 104.6
1978	55 792.1	69 972.5	13 538.0	15 104.6	105.5	105.5	-1 566.6	13 538.0
1979	86 177.4	97 062.0	25 549.9	13 538.0	276.4	276.4	12 011.9	25 549.9
1980	110 784.2	124 965.4	27 475.3	25 549.9	244.6	244.6	1 925.4	27 475.3
1981	59 101.1	70 951.8	20 187.9	27 475.3	-6 085.6	238.4	-963.4	20 187.9
1982	55 227.1	75 924.0	14 909.7	20 187.9	117.9	117.9	-5 278.2	14 909.7
1983	46 956.1	69 389.2	12 785.5	14 909.7	821.2	94.7	-2 850.7	12 785.5
1984	35 275.2	53 763.6	11 909.5	12 785.5	106.9	106.9	-875.9	11 909.5
1985	51 131.7	70 602.4	15 316.4	11 909.5	306.5	134.5	3 234.7	15 316.4
1986	43 070.2	65 892.8	13 139.1	15 316.4	105.6	105.6	-2 177.2	13 139.1
1987	50 382.8	72 329.0	15 009.3	13 139.1	125.8	125.8	1 870.2	15 009.3
1988	32 826.5	53 399.5	11 704.4	15 009.3	103.9	103.9	-3 305.0	11 704.4
1989	39 937.2	61 566.9	13 062.2	11 704.4	396.0	112.0	1 073.9	13 062.2
1990	26 586.7	51 710.5	9 960.8	13 062.2	77.2	77.2	-3 101.4	9 960.8
1991	28 160.8	54 228.7	10 375.3	9 960.8	79.9	79.9	414.5	10 375.3
1992	18 961.8	48 137.9	8 235.2	10 375.3	56.5	56.5	-2 140.1	8 235.2
1993	11 631.2	39 332.9	7 071.9	8 235.2	51.1	51.1	-1 163.3	7 071.9
1994	26 357.1	51 795.0	10 178.6	7 071.9	80.6	80.6	3 106.7	10 178.6
1995	32 184.1	58 037.1	11 469.3	10 178.6	91.3	91.3	1 290.7	11 469.3
1996	46 624.7	75 074.8	13 961.7	11 469.3	104.4	104.4	2 492.4	13 961.7
1997	51 861.0	78 036.9	16 349.6	13 961.7	138.4	138.4	2 387.9	16 349.6

## Note:

1. The reconciliation account entries are calculated using the present value methodology.

## Source:

Statistics Canada, Environment Accounts and Statistics Division.





Table B.1.9

**Value of Proven and Probable Zinc-Lead-Silver Reserves in Canada, 1979-1997**

Year	Closing stock		Present value	Reconciliation account <sup>1</sup>				Closing stock
	Net price I	Net price II		Opening stock	Additions	Depletion	Revaluation	
				million dollars				
1979	13 600.7	15 182.2	10 165.8	4 325.6	433.7	487.2	5 893.8	10 165.8
1980	20 515.6	24 402.0	12 398.8	10 165.8	843.4	324.5	1 714.0	12 398.8
1981	2 794.5	5 501.8	3 479.8	12 398.8	25.5	143.4	-8 801.0	3 479.8
1982	1 942.7	5 446.4	3 376.7	3 479.8	53.1	132.5	-23.7	3 376.7
1983	1 835.7	5 961.5	3 547.2	3 376.7	126.2	126.6	171.0	3 547.2
1984	3 939.0	7 464.5	4 737.3	3 547.2	158.1	196.9	1 228.9	4 737.3
1985	595.7	4 266.3	2 715.8	4 737.3	-46.3	113.7	-1 861.4	2 715.8
1986	4 249.3	7 781.7	5 091.6	2 715.8	-129.9	229.0	2 734.7	5 091.6
1987	3 615.7	6 093.4	4 346.8	5 091.6	-43.6	253.0	-448.1	4 346.8
1988	4 861.6	7 094.7	5 194.4	4 346.8	140.0	330.9	1 038.4	5 194.4
1989	11 199.2	14 027.5	9 866.2	5 194.4	437.0	548.2	4 783.0	9 866.2
1990	8 261.2	11 109.5	7 847.5	9 866.2	-715.1	442.2	-861.3	7 847.5
1991	2 067.2	4 683.5	3 348.9	7 847.5	-181.3	196.5	-4 120.9	3 348.9
1992	4 713.9	6 471.0	4 939.7	3 348.9	49.7	370.1	1 911.2	4 939.7
1993	-	1 612.9	1 177.5	4 939.7	-82.9	74.3	-3 605.0	1 177.5
1994	849.5	3 011.4	2 207.2	1 177.5	85.6	141.2	1 085.3	2 207.2
1995	2 023.8	3 583.4	2 767.5	2 207.2	86.6	218.0	691.7	2 767.5
1996	2 121.4	3 356.6	2 666.9	2 767.5	80.4	239.6	58.6	2 666.9
1997	1 907.4	2 910.3	2 358.4	2 666.9	-653.0	234.7	579.1	2 358.4

**Notes:**

Negative values for Net price I are set to zero.

1. The reconciliation account entries are calculated using the present value methodology.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.

Table B.1.10

**Value of Proven and Probable Reserves of Copper and Copper-Zinc, Nickel-Copper and Molybdenum and Recoverable Reserves of Uranium in Canada, 1977-1997**

Year	Closing stock		Present value	Reconciliation account <sup>1</sup>				Closing stock
	Net price I	Net price II		Opening stock	Additions	Depletion	Revaluation	
				million dollars				
1977	22 176.8	33 880.5	17 313.5	..	..	..	..	17 313.5
1978	42 205.6	56 916.7	25 257.9	17 313.5	665.3	663.7	7 791.7	25 106.9
1979	125 447.0	148 135.8	61 438.9	25 106.9	3 739.7	1 717.0	34 309.3	61 438.9
1980	132 031.9	151 638.1	73 567.7	61 438.9	5 374.7	2 251.2	9 005.3	73 567.7
1981	70 298.7	90 199.1	41 885.0	73 567.7	-3 678.5	1 088.3	-26 915.9	41 885.0
1982	52 695.9	81 239.6	28 217.6	41 885.0	1 125.5	546.2	-14 246.8	28 217.6
1983	41 827.9	64 916.8	29 035.4	28 217.6	-418.1	804.3	2 040.3	29 035.4
1984	39 701.8	56 732.7	30 691.7	29 035.4	-1 860.7	1 077.1	4 594.2	30 691.7
1985	37 008.5	52 993.3	28 404.2	30 691.7	329.2	977.6	-1 639.2	28 404.2
1986	26 238.8	42 265.4	23 895.8	28 404.2	21.4	918.3	-3 611.6	23 895.8
1987	40 021.6	53 977.0	32 625.1	23 895.8	947.0	1 509.5	9 291.9	32 625.1
1988	89 138.4	104 203.0	62 415.7	32 625.1	-255.9	2 674.7	32 721.1	62 415.7
1989	88 572.9	103 431.2	61 936.3	62 415.7	1 349.5	2 557.1	728.2	61 936.3
1990	58 217.9	74 398.9	44 917.1	61 936.3	433.8	2 012.8	-15 440.2	44 917.1
1991	37 069.8	61 064.1	33 539.8	44 917.1	1 416.8	1 335.0	-11 506.3	33 492.6
1992	39 617.2	57 151.6	32 318.3	33 492.6	189.3	1 277.0	-112.0	32 292.8
1993	28 205.5	44 149.8	24 406.1	32 292.8	134.2	838.7	-7 208.0	24 380.4
1994	37 431.7	56 776.6	31 754.1	24 380.4	343.5	1 280.3	8 310.5	31 754.1
1995	62 289.2	80 493.6	46 797.0	31 754.1	4 173.8	2 108.4	12 977.5	46 797.0
1996	42 132.1	66 774.0	38 516.1	46 797.0	1 080.8	1 548.5	-7 813.2	38 516.1
1997	39 790.4	54 498.1	33 917.1	38 516.1	-1 496.0	1 588.2	-1 514.7	33 917.1

**Note:**

1. The reconciliation account entries are calculated using the present value methodology.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.



## Timber resources – monetary data

Table B.1.11

Value of Timber Stocks by Province (Method I),<sup>1</sup> 1961-1997

Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Canada
million dollars											
1961	470.0	...	-	637.9	3 848.1	2 850.2	41.3	-	14.3	4 078.5	11 940.4
1962	426.7	...	2.9	566.4	4 052.3	3 060.0	30.4	-	21.1	4 727.4	12 887.2
1963	418.5	...	43.2	584.0	4 148.2	3 175.2	41.7	7.2	86.2	5 203.4	13 707.7
1964	414.4	...	86.6	660.0	4 321.9	3 298.6	59.1	10.4	110.6	5 700.3	14 661.9
1965	409.1	...	99.8	662.2	4 473.2	3 362.3	66.5	13.4	116.8	5 984.6	15 187.9
1966	399.4	...	126.8	669.2	4 763.7	3 571.1	73.6	14.8	141.3	6 434.8	16 194.8
1967	355.9	...	126.3	638.5	4 814.8	3 563.4	79.7	5.8	167.6	6 558.7	16 310.8
1968	290.1	...	134.9	608.6	4 801.6	3 505.4	73.6	0.0	157.2	7 308.3	16 879.8
1969	224.9	...	165.5	539.4	4 850.1	3 529.5	69.0	3.2	162.7	8 075.4	17 619.7
1970	150.9	...	181.2	467.7	4 793.7	3 447.6	35.5	31.1	175.7	7 796.9	17 080.2
1971	44.8	...	148.4	296.5	4 583.1	3 232.8	5.8	26.8	204.8	7 840.8	16 383.6
1972	-	...	165.9	265.2	4 892.6	3 271.7	-	48.0	261.2	9 133.7	18 038.2
1973	-	...	266.8	437.9	5 799.3	3 881.2	-	155.6	363.0	12 005.3	22 909.2
1974	209.7	...	502.3	1 153.2	7 742.3	5 469.9	-	240.6	479.6	13 875.5	29 673.0
1975	266.0	...	748.9	1 617.8	8 888.4	6 020.1	73.0	280.9	533.8	15 039.4	33 468.2
1976	287.8	...	991.1	1 974.7	9 909.8	6 305.5	103.6	345.2	567.0	18 201.0	38 685.8
1977	575.5	...	1 220.9	2 133.0	11 193.5	6 850.4	93.0	361.3	577.6	20 536.3	43 541.7
1978	867.2	...	1 348.8	2 071.5	13 215.9	7 150.9	89.2	377.1	636.9	22 700.1	48 457.7
1979	1 004.1	...	1 444.6	1 805.8	15 651.6	7 450.3	92.4	468.3	670.0	29 043.8	57 630.9
1980	1 265.9	...	1 725.5	2 226.5	19 106.7	9 458.3	92.2	560.4	610.2	33 742.3	68 787.9
1981	1 666.9	...	2 106.5	2 485.5	23 063.5	11 432.3	135.9	617.7	497.3	31 847.7	73 853.3
1982	1 607.0	...	2 084.4	2 081.1	24 271.3	11 445.5	172.0	532.3	267.2	26 511.4	68 972.3
1983	1 075.3	...	1 871.2	1 855.0	23 577.9	11 464.4	91.5	337.8	91.8	22 841.4	63 206.4
1984	706.0	...	1 854.2	1 739.9	23 569.3	11 843.6	42.3	195.8	17.3	15 880.5	55 848.9
1985	374.2	...	1 725.3	1 184.0	23 767.9	11 417.9	-	7.8	-	12 847.2	51 324.3
1986	-	...	1 686.9	1 531.9	24 912.7	12 435.5	24.8	94.1	45.8	18 838.3	59 569.8
1987	-	...	2 290.0	3 960.5	29 573.1	16 760.0	179.6	586.0	528.3	34 957.2	88 834.6
1988	617.9	...	3 352.9	6 743.8	36 882.1	22 362.7	476.9	924.7	1 002.6	48 787.3	121 151.1
1989	800.1	...	4 074.7	8 544.0	39 558.0	25 904.3	616.7	1 096.9	858.5	61 373.1	142 826.3
1990	834.7	...	4 298.1	9 481.8	38 544.1	27 588.1	656.5	1 452.8	948.4	66 741.7	150 546.2
1991	772.0	...	3 813.4	8 868.6	33 886.6	23 894.1	476.5	934.9	591.7	62 590.4	135 828.3
1992	533.9	...	3 256.6	6 989.6	27 251.8	20 464.8	339.5	165.1	96.1	53 469.4	112 566.9
1993	188.2	...	2 353.6	4 757.3	21 821.8	15 646.4	252.1	-	-	48 730.0	93 749.3
1994	422.5	...	2 007.8	4 767.5	24 357.9	14 775.2	295.8	-	2 263.0	52 769.3	101 658.9
1995	1 571.3	...	3 337.0	9 169.4	39 695.2	21 989.1	841.0	400.4	7 024.2	65 328.2	149 355.8
1996	2 722.1	...	4 156.0	12 491.7	53 451.3	31 515.9	1 337.5	1 149.6	10 210.1	78 388.3	195 422.5
1997	3 560.4	...	4 313.7	13 937.7	66 705.5	38 484.3	1 632.1	2 138.4	12 945.1	89 735.4	233 452.6

## Notes:

Negative stock values are set to zero.

1. The values presented in this table are based on a present value calculation that assumes a positive return to capital (present value I). For a description of this method, please see page 37 of the *Concepts, Sources and Methods of the Canadian System of Environmental Resource Accounts*, Catalogue No. 16-505-GPE, which is included in PDF format on the *Econnections, Indicators and Detailed Statistics 2000* CD-ROM.

## Source:

Statistics Canada, Environment Accounts and Statistics Division.



Table B.1.12

**Value of Timber Stocks by Province (Method II),<sup>1</sup> 1961-1997**

Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Canada
million dollars											
1961	539.1	...	76.6	783.8	4 480.5	3 326.9	69.5	0.4	92.7	4 969.7	14 339.2
1962	497.9	...	92.2	713.0	4 684.7	3 544.5	58.6	6.6	99.5	5 640.5	15 337.5
1963	492.1	...	131.9	729.2	4 784.4	3 662.7	69.5	23.9	163.7	6 136.5	16 193.8
1964	489.9	...	174.5	805.1	4 967.5	3 791.0	86.3	26.7	187.2	6 662.1	17 190.3
1965	487.2	...	187.1	813.7	5 139.3	3 867.5	93.2	29.4	192.8	6 991.5	17 801.7
1966	482.8	...	214.8	831.6	5 470.4	4 110.0	99.6	30.5	216.3	7 545.9	19 001.7
1967	446.6	...	222.9	814.3	5 582.6	4 143.8	104.8	23.5	241.4	7 819.9	19 399.7
1968	389.4	...	246.0	798.7	5 647.0	4 130.6	97.9	12.3	230.3	8 734.9	20 287.2
1969	332.3	...	290.8	743.6	5 773.4	4 192.1	93.0	44.3	235.4	9 656.8	21 361.8
1970	265.0	...	324.4	693.4	5 798.5	4 146.9	63.1	85.5	248.1	9 545.7	21 170.6
1971	167.2	...	318.9	558.5	5 661.1	3 963.1	47.6	95.5	277.0	9 751.5	20 840.4
1972	127.4	...	363.8	574.9	6 028.8	4 035.6	17.7	130.5	340.0	11 211.7	22 830.5
1973	155.3	...	488.7	803.5	6 994.5	4 685.3	44.8	244.1	462.1	14 276.4	28 154.7
1974	396.3	...	752.0	1 579.4	9 037.1	6 338.9	90.3	334.4	615.6	16 395.7	35 539.7
1975	487.5	...	1 031.1	2 105.2	10 352.8	6 996.0	182.2	383.8	716.4	17 887.3	40 142.3
1976	545.5	...	1 298.4	2 515.4	11 593.5	7 420.9	222.1	459.9	803.4	21 391.9	46 251.0
1977	861.7	...	1 546.1	2 719.8	13 129.5	8 141.8	219.9	492.9	869.3	24 048.5	52 029.5
1978	1 176.6	...	1 690.5	2 705.9	15 416.4	8 647.6	223.0	526.3	976.9	26 541.6	57 905.0
1979	1 333.2	...	1 800.7	2 497.0	18 115.7	9 151.9	232.3	634.5	1 055.0	33 236.6	68 057.0
1980	1 615.0	...	2 092.3	2 977.4	21 807.8	11 357.3	236.1	741.6	1 046.1	38 280.9	80 154.5
1981	2 049.2	...	2 483.2	3 294.7	26 022.8	13 538.9	282.6	811.9	986.9	36 854.9	86 325.2
1982	2 031.8	...	2 476.6	2 970.9	27 544.4	13 833.7	321.6	735.8	817.0	32 162.0	82 893.7
1983	1 548.7	...	2 287.8	2 870.3	27 226.3	14 199.1	244.5	549.4	703.2	29 149.3	78 778.6
1984	1 222.8	...	2 297.5	2 885.7	27 582.2	14 917.3	197.4	412.1	677.8	22 707.1	72 899.7
1985	919.3	...	2 191.7	2 442.6	28 130.7	14 807.2	157.4	223.7	685.3	20 061.2	69 619.2
1986	526.8	...	2 178.9	2 877.2	29 603.4	16 120.3	192.4	304.2	754.5	26 198.7	78 756.2
1987	545.2	...	2 807.2	5 368.4	34 757.7	20 622.5	353.0	803.3	1 262.1	42 242.4	108 761.8
1988	1 238.1	...	3 895.2	8 177.4	42 559.3	26 345.1	655.7	1 175.3	1 846.2	56 096.3	141 988.6
1989	1 451.1	...	4 661.9	10 005.9	45 897.4	30 125.3	802.5	1 394.0	1 979.4	69 030.7	165 348.3
1990	1 517.7	...	4 929.6	10 976.0	45 629.1	32 097.5	846.9	1 830.9	2 437.7	75 038.8	175 304.3
1991	1 462.9	...	4 474.4	10 405.1	41 653.1	28 661.9	661.6	1 424.3	2 477.6	71 598.1	162 819.1
1992	1 212.7	...	3 938.5	8 557.4	35 442.5	25 432.9	520.0	752.0	2 472.1	63 246.0	141 574.1
1993	843.2	...	3 041.3	6 332.4	30 321.4	20 740.6	428.3	260.6	2 844.1	59 160.2	123 972.1
1994	1 047.2	...	2 679.6	6 330.2	33 056.4	19 932.2	471.1	248.6	5 482.5	63 671.4	132 919.3
1995	2 173.8	...	4 001.6	10 751.2	48 585.7	27 294.9	1 042.3	1 156.6	10 569.1	76 477.2	182 052.2
1996	3 315.6	...	4 848.0	14 143.2	62 596.2	37 016.9	1 575.4	1 913.1	14 031.5	89 736.8	229 176.6
1997	4 150.0	...	5 132.9	15 672.3	76 168.5	44 217.3	1 921.3	2 905.4	16 913.1	101 178.7	268 259.4

**Note:**

1. The values presented in this table are based on a present value calculation that assumes a zero return to capital (present value II). For a description of this method, please see page 37 of the *Concepts, Sources and Methods of the Canadian System of Environmental Resource Accounts*, Catalogue No. 16-505-GPE, which is included in PDF format on the *Econnections, Indicators and Detailed Statistics 2000* CD-ROM.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.





## Energy resources – physical data

Table B.1.13

### Established Crude Bitumen Reserves in Canada, 1967-1997

Year	Opening stock	Additions	Depletion	Closing stock
thousand cubic metres				
1967	-	179 000	400	178 600
1968	178 600	-	1 400	177 200
1969	177 200	-	2 300	174 900
1970	174 900	-	2 500	172 400
1971	172 400	-100	3 300	169 000
1972	169 000	100	4 000	165 100
1973	165 100	-	3 800	161 300
1974	161 300	-	3 600	157 700
1975	157 700	-	3 300	154 400
1976	154 400	100	3 800	150 700
1977	150 700	-36 100	3 400	111 200
1978	111 200	215 000	4 700	321 500
1979	321 500	39 000	7 400	353 100
1980	353 100	-8 900	10 300	333 900
1981	333 900	-	8 900	325 000
1982	325 000	-	9 400	315 600
1983	315 600	12 100	17 300	310 400
1984	310 400	30 000	11 600	328 800
1985	328 800	30 000	15 400	343 400
1986	343 400	249 900	18 900	574 400
1987	574 400	18 200	20 100	572 500
1988	572 500	15 400	21 400	566 500
1989	566 500	-1 100	23 200	542 200
1990	542 200	4 500	22 700	524 000
1991	524 000	300	22 600	501 700
1992	501 700	4 300	23 800	482 200
1993	482 200	-	24 600	457 600
1994	457 600	131 400	24 000	565 000
1995	565 000	37 200	28 200	574 000
1996	574 000	114 900	28 100	660 800
1997	660 800	-13 900	32 900	614 000

**Source:**

Alberta Energy and Utilities Board.

Table B.1.14

### Established Crude Oil Reserves in Canada, 1961-1997 \*

Year	Opening stock	Additions	Depletion	Closing stock
millions of cubic metres				
1961	672.3	73.3	35.0	710.6
1962	710.6	71.7	38.7	743.6
1963	743.6	83.8	40.9	786.6
1964	786.6	376.0	43.6	1 118.9
1965	1 118.9	96.7	46.3	1 169.3
1966	1 169.3	176.9	50.7	1 295.6
1967	1 295.6	108.1	55.5	1 348.2
1968	1 348.2	139.8	59.1	1 428.9
1969	1 428.9	63.7	63.5	1 429.2
1970	1 429.2	53.5	71.1	1 411.6
1971	1 411.6	32.2	75.5	1 368.3
1972	1 368.3	23.5	85.9	1 305.9
1973	1 305.9	20.8	101.2	1 225.4
1974	1 225.4	43.5	94.6	1 174.4
1975	1 174.4	10.1	80.0	1 104.5
1976	1 104.5	-16.9	73.0	1 014.6
1977	1 014.6	27.6	73.1	969.1
1978	969.1	45.9	72.3	942.7
1979	942.7	41.3	80.7	903.3
1980	903.3	32.6	75.2	860.7
1981	860.7	33.7	66.6	827.8
1982	827.8	17.3	64.5	780.6
1983	780.6	79.8	68.0	792.4
1984	792.4	56.8	73.0	776.3
1985	776.3	84.9	70.7	790.5
1986	790.5	51.9	67.8	774.6
1987	774.6	47.9	68.9	753.6
1988	753.6	58.0	72.3	739.2
1989	739.2	37.0	68.4	707.8
1990	707.8	17.8	68.2	657.3
1991	657.3	24.3	66.7	614.9
1992	614.9	45.4	69.8	590.4
1993	590.4	52.2	78.7	564.3
1994	564.3	85.0	79.3	569.9
1995	569.9	85.8	77.3	578.4
1996	578.4	52.2	78.7	552.9
1997	552.9	85.0	79.3	558.6

**Sources:**

Canadian Association of Petroleum Producers.

Alberta Energy and Utilities Board.

British Columbia Ministry of Energy, Mines and Petroleum Resources.

Manitoba Energy and Mines, Petroleum and Energy Branch.

Saskatchewan Department of Energy and Mines.

Statistics Canada, *Oil and gas extraction*, Catalogue No. 26-213-XPB, Ottawa.

Table B.1.15

**Established Natural Gas Reserves in Canada, 1961-1997 \***

Year	Opening stock	Additions	Depletion	Closing stock
billions of cubic metres				
1961	990.0	125.2	15.7	1 099.5
1962	1 099.5	53.8	22.8	1 130.5
1963	1 130.5	53.8	24.5	1 159.8
1964	1 159.8	80.5	26.9	1 213.5
1965	1 213.5	98.5	30.0	1 282.0
1966	1 282.0	57.7	31.7	1 308.0
1967	1 308.0	97.3	34.8	1 370.6
1968	1 370.6	136.2	38.2	1 468.6
1969	1 468.6	109.4	47.2	1 530.8
1970	1 530.8	80.5	50.2	1 561.2
1971	1 561.2	59.1	59.4	1 560.8
1972	1 560.8	67.8	65.4	1 563.2
1973	1 563.2	191.0	69.8	1 684.3
1974	1 684.3	135.2	68.8	1 750.8
1975	1 750.8	-7.1	68.3	1 675.4
1976	1 675.4	128.3	65.7	1 738.1
1977	1 738.1	124.2	72.0	1 790.2
1978	1 790.2	197.0	76.0	1 911.2
1979	1 911.2	147.7	82.0	1 977.0
1980	1 977.0	124.1	72.8	2 028.3
1981	2 028.3	133.7	77.2	2 084.8
1982	2 084.8	132.0	69.1	2 147.7
1983	2 147.7	52.1	74.0	2 125.9
1984	2 125.9	56.9	76.8	2 106.1
1985	2 106.1	57.3	83.5	2 079.8
1986	2 079.8	31.3	79.0	2 032.1
1987	2 032.1	2.6	79.4	1 955.3
1988	1 955.3	77.7	101.8	1 931.2
1989	1 931.2	129.0	103.1	1 957.1
1990	1 957.1	131.4	110.0	1 978.6
1991	1 978.6	85.5	98.9	1 965.2
1992	1 965.2	89.7	125.7	1 929.1
1993	1 929.1	72.8	142.1	1 859.9
1994	1 859.9	115.7	142.8	1 832.7
1995	1 832.7	158.5	150.3	1 840.9
1996	1 840.9	41.1	156.2	1 725.9
1997	1 725.9	53.2	158.7	1 620.4

**Sources:**

Canadian Association of Petroleum Producers.  
 Alberta Energy and Utilities Board.  
 British Columbia Ministry of Energy, Mines and Petroleum Resources.  
 Manitoba Energy and Mines, Petroleum and Energy Branch.  
 Saskatchewan Department of Energy and Mines.  
 Statistics Canada, *Oil and gas extraction*, Catalogue No. 26-213-XPB, Ottawa.

Table B.1.16

**Established Reserves of Natural Gas Liquids<sup>1</sup> in Canada, 1961-1997 \***

Year	Opening stock	Additions	Depletion	Closing stock
thousand cubic metres				
1961	15 051.0	7 880.0	612.0	130 719.0
1962	130 719.0	339.0	701.0	157 357.0
1963	157 357.0	1 710.0	597.0	166 870.0
1964	166 870.0	37 735.0	5 926.0	198 679.0
1965	198 679.0	33 607.0	12 293.0	219 993.0
1966	219 993.0	8 623.0	8 500.0	220 116.0
1967	220 116.0	23 995.0	8 917.0	235 194.0
1968	235 194.0	98 271.0	10 147.0	323 318.0
1969	323 318.0	57 203.0	11 322.0	369 199.0
1970	369 199.0	14 371.0	13 182.0	370 388.0
1971	370 388.0	-10 789.0	14 205.0	345 394.0
1972	345 394.0	6 675.0	18 089.0	333 980.0
1973	333 980.0	29 879.0	19 446.0	619 013.0
1974	619 013.0	-7 317.0	18 596.0	593 800.0
1975	593 800.0	-5 984.0	18 452.0	574 864.0
1976	574 864.0	22 406.0	16 831.0	580 739.0
1977	580 739.0	16 661.0	17 249.0	577 651.0
1978	577 651.0	26 457.0	16 827.0	598 781.0
1979	598 781.0	14 333.0	19 659.0	602 055.0
1980	602 055.0	8 376.0	19 545.0	599 386.0
1981	599 386.0	57 460.0	19 109.0	637 737.0
1982	637 737.0	30 229.0	18 490.0	649 476.0
1983	649 476.0	5 923.0	18 330.0	637 069.0
1984	637 069.0	34 777.0	19 672.0	652 196.0
1985	652 196.0	14 821.0	20 578.0	646 439.0
1986	646 439.0	13 115.4	19 994.4	639 560.0
1987	639 560.0	33 634.0	21 987.0	651 207.0
1988	651 207.0	38 155.1	23 701.1	665 661.0
1989	665 661.0	27 273.8	23 733.8	669 201.0
1990	669 201.0	4 344.3	23 827.3	649 718.0
1991	649 718.0	15 272.0	25 055.0	639 935.0
1992	639 935.0	22 067.2	25 414.2	636 588.0
1993	636 588.0	15 174.5	30 117.5	621 645.0
1994	621 645.0	-33.9	28 333.1	593 278.0
1995	593 278.0	36 844.6	30 553.6	599 569.0
1996	599 569.0	-20 059.5	32 929.5	546 580.0
1997	546 580.0	-10 374.4	33 454.6	502 751.0

**Note:**

1. Includes propane, ethane, butane and pentanes plus.

**Sources:**

Alberta Energy Resources Conservation Board.  
 Canadian Association of Petroleum Producers.  
 British Columbia Ministry of Energy, Mines and Petroleum Resources,  
*Hydrocarbon and By-product Reserves in British Columbia (1970-1986)*, Victoria.  
 British Columbia Ministry of Energy, Mines and Petroleum Resources,  
*Annual Report (1961-1969)*, Victoria.



Table B.1.17

**Established Sulphur Reserves in Canada, 1962-1997 \***

Year	Opening stock	Additions	Depletion	Closing stock
thousand tonnes				
1962	..	..	..	84 750.1
1963	84 750.1	..	..	75 216.7
1964	75 216.7	460.2	1 461.3	74 215.6
1965	74 215.6	18 962.3	1 571.7	91 606.2
1966	91 606.2	24 305.5	1 774.7	114 137.0
1967	114 137.0	8 716.9	2 175.1	120 678.8
1968	120 678.8	26 728.0	3 057.9	144 348.9
1969	144 348.9	5 802.9	3 889.4	146 262.4
1970	146 262.4	24 004.6	4 415.8	165 851.2
1971	165 851.2	-3 417.7	4 699.5	157 734.0
1972	157 734.0	-1 018.7	6 751.3	149 964.0
1973	149 964.0	6 020.1	7 243.2	148 740.9
1974	148 740.9	-534.7	7 071.9	141 134.3
1975	141 134.3	5 960.7	6 634.5	140 460.5
1976	140 460.5	-14 200.5	6 359.2	119 900.8
1977	119 900.8	2 963.7	6 663.7	116 200.8
1978	116 200.8	-1 060.2	6 435.8	108 704.8
1979	108 704.8	3 590.0	6 023.8	106 271.0
1980	106 271.0	-5 972.8	5 870.3	94 427.9
1981	94 427.9	2 371.7	5 581.1	91 218.5
1982	91 218.5	7 276.9	5 165.4	93 330.0
1983	93 330.0	5 383.7	5 363.3	93 350.4
1984	93 350.4	732.2	5 329.1	88 753.5
1985	88 753.5	959.4	5 258.6	84 454.3
1986	84 454.3	2 165.9	5 165.9	81 454.3
1987	81 454.3	15 433.2	5 288.5	91 599.0
1988	91 599.0	10 862.1	5 392.1	97 069.0
1989	97 069.0	7 412.0	5 113.0	99 368.0
1990	99 368.0	4 096.5	5 221.5	98 243.0
1991	98 243.0	1 749.4	5 452.4	94 540.0
1992	94 540.0	9 906.6	5 725.6	98 721.0
1993	98 721.0	3 677.4	6 602.4	95 796.0
1994	96 246.0	5 006.1	7 021.1	94 231.0
1995	94 231.0	1 693.3	6 935.3	88 989.0
1996	88 989.0	1 122.1	7 317.1	82 794.0
1997	82 794.0	-1 875.3	7 311.7	73 607.0

**Sources:**

Alberta Energy Resources Conservation Board.  
 Canadian Association of Petroleum Producers.  
 British Columbia Ministry of Energy, Mines and Petroleum Resources,  
*Hydrocarbon and By-product Reserves in British Columbia (1970-1986)*, Victoria.  
 British Columbia Ministry of Energy, Mines and Petroleum Resources,  
*Annual Report (1961-1969)*, Victoria.

Table B.1.18

**Recoverable Reserves of Bituminous Coal in Canada, 1976-1997 \***

Year	Opening stock	Additions	Depletion	Closing stock
thousand tonnes				
1976	1 641 214	-2 169	14 388	1 624 657
1977	1 624 657	-2 340	15 317	1 607 000
1978	1 607 000	-2 193	17 141	1 587 666
1979	1 587 666	-47 163	18 612	1 521 891
1980	1 521 891	46 852	20 173	1 548 570
1981	1 548 570	-4 105	21 739	1 522 726
1982	1 522 726	1 586 570	22 296	3 087 000
1983	3 087 000	327 315	22 563	3 391 752
1984	3 391 752	201 630	32 062	3 561 320
1985	3 561 320	-55 831	33 689	3 471 800
1986	3 471 800	377 620	32 200	3 817 220
1987	3 817 220	-52 798	32 655	3 731 767
1988	3 731 767	9 558	38 586	3 702 739
1989	3 702 739	-40	38 793	3 663 906
1990	3 663 906	135 153	37 672	3 761 387
1991	3 761 387	13 338	39 911	3 734 814
1992	3 734 814	125 508	32 567	3 827 755
1993	3 827 755	-4 342	35 323	3 788 090
1994	3 788 090	-3 804	36 645	3 747 641
1995	3 747 641	-4 477	38 619	3 704 545
1996	3 704 545	-5 836	40 028	3 658 681
1997	3 658 681	-	41 238	3 617 443

**Sources:**

Statistics Canada, *Coal Mines*, Catalogue No. 26-206, Ottawa.  
 Natural Resources Canada, *Canadian Minerals Yearbook*, Ottawa.  
 Alberta Energy and Utilities Board.  
 New Brunswick Coal Ltd., Paper No. 104, April 1991.





Table B.1.19  
Recoverable Subbituminous Coal and Lignite  
Reserves in Canada, 1976-1997 \*

Year	Opening stock	Additions	Depletion	Closing stock
thousand tonnes				
1976	2 686 000	11 097	11 097	2 686 000
1977	2 686 000	-162 674	13 326	2 510 000
1978	2 510 000	8 279	13 337	2 504 942
1979	2 504 942	9 580	14 593	2 499 929
1980	2 499 929	160 500	16 471	2 643 958
1981	2 643 958	11 500	18 298	2 637 160
1982	2 637 160	334	20 494	2 617 000
1983	2 617 000	-5 500	22 260	2 589 240
1984	2 589 240	-4 600	25 317	2 559 323
1985	2 559 323	7 149	26 472	2 540 000
1986	2 540 000	7 500	25 780	2 521 720
1987	2 521 720	358 500	28 520	2 851 700
1988	2 851 700	20 000	32 148	2 839 552
1989	2 839 552	900	31 716	2 808 736
1990	2 808 736	41 700	31 107	2 819 329
1991	2 819 329	22 300	31 281	2 810 348
1992	2 810 348	-82 884	33 143	2 694 321
1993	2 694 321	455	33 500	2 661 276
1994	2 661 276	-556	36 129	2 624 591
1995	2 624 591	506	36 246	2 588 851
1996	2 588 851	-1 014	35 825	2 552 012
1997	2 552 012	-	37 436	2 514 576

## Sources:

Statistics Canada, *Coal Mines*, Catalogue No. 26-206, Ottawa.  
Natural Resources Canada, *Canadian Minerals Yearbook*, Ottawa.  
Alberta Energy and Utilities Board.

Table B.1.20  
Recoverable Uranium Reserves in Canada,  
1976-1997

Year	Opening stock	Additions	Depletion	Closing stock
tonnes				
1976	319 000	91 439	5 439	405 000
1977	405 000	15 787	5 787	415 000
1978	415 000	31 211	8 211	438 000
1979	438 000	36 530	6 530	468 000
1980	468 000	-17 261	6 739	444 000
1981	444 000	-96 493	7 507	340 000
1982	340 000	43 643	7 643	376 000
1983	376 000	-36 177	6 823	333 000
1984	333 000	-62 728	10 272	260 000
1985	260 000	13 441	10 441	263 000
1986	263 000	13 502	11 502	265 000
1987	265 000	6 612	13 612	258 000
1988	258 000	2 066	12 066	248 000
1989	248 000	11 995	10 995	249 000
1990	249 000	55 721	9 721	295 000
1991	295 000	18 162	8 162	305 000
1992	305 000	13 114	9 114	309 000
1993	309 000	12 697	8 697	313 000
1994	313 000	-1 800	11 200	300 000
1995	300 000	194 238	10 238	484 000
1996	484 000	-42 652	11 348	430 000
1997	430 000	127	11 127	419 000

## Source:

Natural Resources Canada, *Canadian Minerals Yearbook*, Ottawa.

Table B.1.21  
Total Resource Base - Natural Gas Resources, Year-end 1997

Natural gas region	Discovered marketable resources				Undiscovered resources	Ultimate resource potential
	Cumulative production	Remaining established reserves	Unconnected reserves <sup>1, 2</sup>	Total		
Canada	2 918	1 454	1 246	5 617	15 155	20 774
WCSB <sup>3</sup> conventional	2 890	1 361	255	4 506	4 986	9 492
Alberta	2 436	1 076	227	3 739	3 909	7 648
British Columbia	329	198	28	555	850	1 405
Saskatchewan	113	85	-	198	57	255
Southern Territories	12	2	-	14	170	184
WCSB <sup>3</sup> unconventional	-	-	-	-	2 125	2 125
Other conventional	28	93	57	178	396	574
Ontario	28	8	-	36	28	64
Scotian Shelf	-	85	57	142	368	510
Frontier	-	-	935	935	7 648	8 583
Grand Banks/Labrador	-	-	255	255	1 020	1 275
Mackenzie/Beaufort	-	-	255	255	1 558	1 813
Arctic Islands	-	-	397	397	2 266	2 663
Other Yukon/N.W.T.	-	-	28	28	283	311
Other frontier	-	-	-	-	2 521	2 521

## Notes:

1. Unconnected reserves are part of the established reserves that are not connected to a transportation system.

2. For Other conventional and Frontier resources, this refers to Discovered resources.

3. Western Canada Sedimentary Basin.

## Source:

National Energy Board, 1999, *Canadian Energy - Supply and Demand to 2025*, Catalogue No. NE 23-15/1999E, Calgary.



Table B.1.22

**Total Resource Base - Crude Oil and Bitumen Resources, Year-end 1997**

Petroleum region	Discovered marketable resources				Undiscovered recoverable resources	Ultimate recoverable resources	Original oil in place
	Cumulative production	Remaining established reserves	Future improved recovery <sup>1</sup>	Total			
million cubic metres							
Conventional crude oil	2 792	666	1 096	4 555	4 623	9 177	34 388
Sub-total - Light	2 255	459	784	3 499	4 394	7 892	27 813
WCSB <sup>2</sup> - Sub-total	2 211	338	408	2 957	666	3 623	11 383
British Columbia	87	23	18	129	55	184	512
Alberta	1 910	259	267	2 436	570	3 007	9 199
Saskatchewan	181	51	121	353	34	387	1 437
Manitoba	32	5	2	39	7	46	235
Ontario	12	2	-	14	-	14	62
Frontier - Sub-total	32	119	376	528	3 727	4 255	16 368
Nova Scotia offshore	6	2	3	11	83	94	493
Newfoundland Grand Banks	-	106	145	251	498	749	3 365
Mainland N.W.T. and Yukon	26	11	2	40	55	95	315
Mackenzie Delta and Beaufort Sea	-	-	161	161	905	1 066	3 610
Arctic Islands	-	-	65	65	686	751	2 785
Other frontier basins <sup>3</sup>	-	-	-	-	1 500	1 500	5 800
Sub-total - Heavy	536	208	312	1 056	229	1 285	6 575
Alberta	215	68	122	405	96	501	2 406
Saskatchewan	322	140	190	651	133	784	4 169
Oil sands	407	614	47 979	49 000	-	49 000	400 000
Mining projects <sup>4,5</sup>	304	340	9 356	10 000	-	10 000	24 100
<i>in situ</i> projects <sup>4</sup>	103	274	38 623	39 000	-	39 000	375 900

**Notes:**

1. In conventional light and heavy categories, this refers to future enhanced recovery from the existing discovered pools. In frontier regions, this refers to pools currently discovered but not yet on production due to economic or technical conditions.

2. Western Canada Sedimentary Basin.

3. Resource estimates for prospective regions that lack confirming discoveries have been aggregated. These regions include the Georges Bank and Laurentian Sub-basin, East Newfoundland Basin and southern Grand Banks, the St. Lawrence Lowlands and Maritimes Basin, Hudson Bay, eastern Arctic offshore and the Queen Charlotte, Tofino and Georgia basins.

4. Cumulative production and remaining established reserves estimates include only projects under active development.

5. Cumulative production figures are for the raw bitumen volumes.

**Source:**

National Energy Board, 1999, *Canadian Energy - Supply and Demand to 2025*, Catalogue No. NE 23-15/1999E, Calgary.

Table B.1.23

**Total Resource Base - Remaining Established Coal Reserves, Year-end 1985**

Province	Thermal <sup>2</sup>			Total	Metallurgical <sup>3</sup>	
	Lignite	Sub-bituminous	Bituminous		Bituminous	Total
	megatonnes					
British Columbia	566	-	433	999	1 563	2 562
Alberta <sup>1</sup>	-	1 100	1 300	2 400	230	2 630
Saskatchewan	1 670	-	-	1 670	-	1 670
New Brunswick	-	-	21	21	-	21
Nova Scotia	-	-	300	300	115	415
Canada	2 236	1 100	2 054	5 390	1 908	7 298

**Notes:**

1. The Alberta Energy and Utilities Board estimates of coal reserves, within mine permit boundaries, are 2 628 megatonnes as of December 1993.

2. Thermal coals generally include the lignite-sub-bituminous, high volatile bituminous and low volatile bituminous-anthracite classes.

3. Metallurgical coals generally include the medium-low volatile bituminous and high-medium volatile bituminous classes.

**Source:**

CANMET, 1987, *Coal Mining in Canada*, 1986, Report 87-3E, Ottawa, as reproduced in National Energy Board, 1999, *Canadian Energy - Supply and Demand to 2025*, Catalogue No. NE 23-15/1999E, Calgary.



Table B.1.24

**Total Resource Base - Coal Resources, Year-end 1985**

Coal region		Coal rank <sup>1</sup>	Immediate interest			Future interest			
			Assurance <sup>2,3</sup>			Assurance			
			Measured	Indicated	Inferred	Measured	Indicated	Inferred	Speculative
			megatonnes						
Coastal British Columbia									
	Vancouver Island	hvb - mvb	35	80	200	-	-	300	-
	Queen Charlotte Islands	lvb - an	-	-	10	-	-	-	-
		hvb- mvb	-	15	10	-	-	-	
		lig- sub	-	-	50	-	-	-	500
Intermontane British Columbia									
	Northern District	lvb - an	100	500	1 000	-	-	-	4 000
		hvb - mvb	30	50	100	-	-	-	100
	Southern District	sub - hvb	40	120	340	-	-	-	-
		lig- sub	450	320	270	-	-	-	-
Rocky Mountains and Foothills									
	Front Ranges								
	East Kootenays	hvb - mvb	1 390	1 320	4 040	-	2 700	-	-
	Crowsnest	mvb - lvb	265	140	510	-	200	-	-
		hvb- mvb	330	170	630	-	-	-	-
	Cascade	lvb - an	240	120	455	-	210	-	-
	Panther River-Clearwater	lvb - an	-	-	-	15	15	700	-
	Inner Foothills								
	Southern District	mvb - lvb	635	320	1 145	-	245	-	-
		hvb- mvb	150	75	275	-	-	-	-
	Northern District	mvb - lvb	1 115	2 385	6 270	-	100	-	-
	Outer Foothills	sub - hvb	830	740	1 955	-	200	-	-
Plains									
	Mannville Group	lig - sub	-	35	100	-	-	30	-
	Belly River/Edmonton/Wapiti	sub - hvb	1 240	585	1 860	-	820	-	-
		lig- sub	11 860	4 935	16,575	-	14 115	-	-
	Paskapoo	sub - hvb	120	60	175	-	25	-	-
	Ravenscrag	lig - sub	1 445	2 680	3 440	165	3 910	23 510	-
	Deep Coal	sub - hvb	-	-	-	1 200	4 000	50 000	85 000
Hudson Bay Lowland									
	Onakawana	lig - sub	170	10	-	...	...	...	...
Atlantic Provinces		hvb - mvb	345	365	770	-	1 500	215	-
Northern Canada									
	Yukon/District of Mackenzie	lvb - an	-	-	90	...	...	...	...
		hvb - mvb	-	-	150	...	...	...	...
		sub - hvb	-	-	350	...	...	...	...
		lig - sub	-	-	2 290	...	...	...	...
	Arctic Archipelago	sub - hvb	-	-	-	-	500	550	4 500
		lig - sub	-	-	-	-	7 000	7 500	31 000
Canada		lvb - an	340	620	1 555	15	225	700	4 000
		mvb - lvb	2 015	2 845	7 925	-	545	-	-
		hvb- mvb	2 280	2 075	6 175	-	4 200	515	100
		sub - hvb	2 230	1 505	4 680	1 200	5 545	50 550	89 500
		lig - sub	13 925	7 980	22 725	165	25 025	31 040	31 500
		All ranks	20 790	15 025	43 060	1 380	35 540	82 805	125 100

**Notes:**

1. an: anthracite; lvb: low volatile bituminous; mvb: medium volatile bituminous; hvb: high volatile bituminous; sub: sub-bituminous; lig: lignite.

2. These estimates of coal resources may differ from those of the respective provincial governments because of different estimating criteria and parameters used.

3. Resources shown in this table include reserves.

**Source:**

Geological Survey of Canada, 1989, *Coal Resources of Canada*, Paper 89-4, Ottawa, as reproduced in National Energy Board, 1999, *Canadian Energy - Supply and Demand to 2025*, Catalogue No. NE 23-15/1999E, Calgary.





## Mineral resources – physical data

Table B.1.25

### Proven and Probable Copper Reserves in Canada, 1977-1997 \*

Year	Opening stock	Additions	Depletion	Closing stock
thousand tonnes				
1977	..	..	..	16 914.0
1978	16 914.0	-70.6	659.4	16 184.0
1979	16 184.0	1 173.4	636.4	16 721.0
1980	16 721.0	709.4	716.4	16 714.0
1981	16 714.0	-511.7	691.3	15 511.0
1982	15 511.0	1 990.5	612.5	16 889.0
1983	16 889.0	-22.0	653.0	16 214.0
1984	16 214.0	37.8	721.8	15 530.0
1985	15 530.0	-590.4	738.6	14 201.0
1986	14 201.0	-584.5	698.5	12 918.0
1987	12 918.0	803.1	794.1	12 927.0
1988	12 927.0	316.5	758.5	12 485.0
1989	12 485.0	301.4	704.4	12 082.0
1990	12 082.0	-22.6	771.4	11 288.0
1991	11 288.0	537.4	780.4	11 045.0
1992	11 045.0	465.7	761.7	10 749.0
1993	10 749.0	-255.4	709.7	9 784.0
1994	9 784.0	332.3	583.3	9 533.0
1995	9 533.0	417.8	700.8	9 250.0
1996	9 250.0	1 069.5	652.5	9 667.0
1997	9 667.0	12.8	647.8	9 032.0

**Sources:**

Natural Resources Canada, *Canadian Minerals Yearbook*, Ottawa.  
 Statistics Canada, *Metal Mines*, Catalogue No. 26-223-XPB, Ottawa.

Table B.1.26

### Proven and Probable Gold Reserves from Gold Mines in Canada, 1977-1997 \*

Year	Opening stock	Additions	Depletion	Closing stock
tonnes				
1977	..	..	..	493.0
1978	493.0	66.0	54.0	505.0
1979	505.0	121.1	51.1	575.0
1980	575.0	301.6	50.6	826.0
1981	826.0	77.0	52.0	851.0
1982	851.0	46.7	64.7	833.0
1983	833.0	412.5	73.5	1 172.0
1984	1 172.0	119.4	83.4	1 208.0
1985	1 208.0	252.6	87.6	1 373.0
1986	1 373.0	236.9	102.9	1 507.0
1987	1 507.0	313.8	115.8	1 705.0
1988	1 705.0	230.8	134.8	1 801.0
1989	1 801.0	3.5	159.5	1 645.0
1990	1 645.0	64.4	167.4	1 542.0
1991	1 542.0	66.3	175.3	1 433.0
1992	1 433.0	71.4	160.4	1 344.0
1993	1 344.0	142.1	153.1	1 333.0
1994	1 333.0	326.4	146.4	1 513.0
1995	1 513.0	177.9	150.9	1 540.0
1996	1 540.0	348.7	164.7	1 724.0
1997	1 724.0	-59.5	171.5	1 493.0

**Sources:**

Natural Resources Canada, *Canadian Minerals Yearbook*, Ottawa.  
 Statistics Canada, *Metal Mines*, Catalogue No. 26-223-XPB, Ottawa.

Table B.1.27

### Proven and Probable Iron Reserves in Canada, 1976-1997

Year	Opening stock	Additions	Depletion	Closing stock
million tonnes				
1976	5 511.2	55.4	55.4	5 511.2
1977	5 511.2	53.6	53.6	5 511.2
1978	5 511.2	42.9	42.9	5 511.2
1979	5 511.2	59.6	59.6	5 511.2
1980	5 511.2	49.1	49.1	5 511.2
1981	5 511.2	-1 265.1	49.6	4 196.6
1982	4 196.6	33.2	33.2	4 196.6
1983	4 196.6	285.8	33.0	4 449.4
1984	4 449.4	39.9	39.9	4 449.4
1985	4 449.4	90.1	39.5	4 500.0
1986	4 500.0	36.2	36.2	4 500.0
1987	4 500.0	37.7	37.7	4 500.0
1988	4 500.0	39.9	39.9	4 500.0
1989	4 500.0	139.4	39.4	4 600.0
1990	4 600.0	35.7	35.7	4 600.0
1991	4 600.0	35.4	35.4	4 600.0
1992	4 600.0	31.6	31.6	4 600.0
1993	4 600.0	33.2	33.2	4 600.0
1994	4 600.0	36.4	36.4	4 600.0
1995	4 600.0	36.6	36.6	4 600.0
1996	4 600.0	34.4	34.4	4 600.0
1997	4 600.0	34.4	38.9	4 600.0

**Source:**

Natural Resources Canada, *Canadian Minerals Yearbook*, Ottawa.

Table B.1.28

### Proven and Probable Lead Reserves in Canada, 1977-1997 \*

Year	Opening stock	Additions	Depletion	Closing stock
thousand tonnes				
1977	..	..	..	8 954.0
1978	8 954.0	295.8	319.8	8 930.0
1979	8 930.0	372.7	310.7	8 992.0
1980	8 992.0	896.6	251.6	9 637.0
1981	9 637.0	11.6	268.6	9 380.0
1982	9 380.0	31.2	272.2	9 139.0
1983	9 139.0	214.0	272.0	9 081.0
1984	9 081.0	363.3	264.3	9 180.0
1985	9 180.0	-408.7	268.3	8 503.0
1986	8 503.0	-569.7	334.3	7 599.0
1987	7 599.0	-96.8	373.2	7 129.0
1988	7 129.0	33.1	351.1	6 811.0
1989	6 811.0	174.9	268.9	6 717.0
1990	6 717.0	-840.6	233.4	5 643.0
1991	5 643.0	-437.9	248.1	4 957.0
1992	4 957.0	-287.4	339.6	4 330.0
1993	4 330.0	5.1	183.1	4 152.0
1994	4 152.0	-123.4	167.6	3 861.0
1995	3 861.0	3.2	204.2	3 660.0
1996	3 660.0	31.8	241.8	3 450.0
1997	3 450.0	-935.2	170.8	2 344.0

**Sources:**

Natural Resources Canada, *Canadian Minerals Yearbook*, Ottawa.  
 Statistics Canada, *Metal Mines*, Catalogue No. 26-223-XPB, Ottawa.



Table B.1.29

**Proven and Probable Molybdenum Reserves in Canada, 1977-1997**

Year	Opening stock	Additions	Depletion	Closing stock
tonnes				
1977	..	..	16 567	369 000
1978	369 000	108 943	13 943	464 000
1979	464 000	96 175	11 175	549 000
1980	549 000	13 889	11 889	551 000
1981	551 000	-33 150	12 850	505 000
1982	505 000	-22 039	13 961	469 000
1983	469 000	-16 806	10 194	442 000
1984	442 000	-29 443	11 557	401 000
1985	401 000	-29 148	7 852	364 000
1986	364 000	-6 749	11 251	346 000
1987	346 000	-110 229	14 771	221 000
1988	221 000	27 535	13 535	235 000
1989	235 000	12 543	13 543	234 000
1990	234 000	-28 812	12 188	193 000
1991	193 000	437	11 437	182 000
1992	182 000	-10 130	8 870	163 000
1993	163 000	8 250	10 250	161 000
1994	161 000	-3 241	9 759	148 000
1995	148 000	-9 887	9 113	129 000
1996	129 000	23 789	8 789	144 000
1997	144 000	12 594	7 594	149 000

**Source:**Natural Resources Canada, *Canadian Minerals Yearbook*, Ottawa.

Table B.1.31

**Proven and Probable Potash Reserves in Canada, 1976-1997**

Year	Opening stock	Additions	Depletion	Closing stock
million tonnes				
1976	1 300 000	5 214	5 214	1 300 000
1977	1 300 000	5 763	5 763	1 300 000
1978	1 300 000	6 344	6 344	1 300 000
1979	1 300 000	7 074	7 074	1 300 000
1980	1 300 000	7 201	7 201	1 300 000
1981	1 300 000	6 549	6 549	1 300 000
1982	1 300 000	5 309	5 309	1 300 000
1983	1 300 000	6 294	6 294	1 300 000
1984	1 300 000	7 527	7 527	1 300 000
1985	1 300 000	6 661	6 661	1 300 000
1986	1 300 000	6 752	6 752	1 300 000
1987	1 300 000	7 668	7 668	1 300 000
1988	1 300 000	208 154	8 154	1 500 000
1989	1 500 000	2 907 014	7 014	4 400 000
1990	4 400 000	7 345	7 345	4 400 000
1991	4 400 000	7 087	7 087	4 400 000
1992	4 400 000	7 040	7 040	4 400 000
1993	4 400 000	6 880	6 880	4 400 000
1994	4 400 000	8 517	8 517	4 400 000
1995	4 400 000	8 855	8 855	4 400 000
1996	4 400 000	8 120	8 120	4 400 000
1997	4 400 000	8 120	9 235	4 400 000

**Source:**Natural Resources Canada, *Canadian Minerals Yearbook*, Ottawa.

Table B.1.30

**Proven and Probable Nickel Reserves in Canada, 1976-1997 \***

Year	Opening stock	Additions	Depletion	Closing stock
thousand tonnes				
1976	..	..	..	7 389.0
1977	7 389.0	-86.5	232.5	7 070.0
1978	7 070.0	303.3	128.3	7 245.0
1979	7 245.0	185.5	126.5	7 304.0
1980	7 304.0	893.8	184.8	8 013.0
1981	8 013.0	-271.8	160.2	7 581.0
1982	7 581.0	-153.4	88.6	7 339.0
1983	7 339.0	126.0	125.0	7 340.0
1984	7 340.0	55.7	173.7	7 222.0
1985	7 222.0	-5.0	170.0	7 047.0
1986	7 047.0	-179.4	163.6	6 704.0
1987	6 704.0	91.1	189.1	6 606.0
1988	6 606.0	-128.3	198.7	6 279.0
1989	6 279.0	49.6	195.6	6 133.0
1990	6 133.0	-146.0	195.0	5 792.0
1991	5 792.0	87.1	188.1	5 691.0
1992	5 691.0	91.6	177.6	5 605.0
1993	5 605.0	-18.5	178.5	5 408.0
1994	5 408.0	68.0	142.0	5 334.0
1995	5 334.0	670.1	172.1	5 832.0
1996	5 832.0	-26.6	182.4	5 623.0
1997	5 623.0	-320.4	180.6	5 122.0

**Sources:**Natural Resources Canada, *Canadian Minerals Yearbook*, Ottawa.Statistics Canada, *Metal Mines*, Catalogue No. 26-223-XPB, Ottawa.

Table B.1.32

**Proven and Probable Silver Reserves in Canada, 1977-1997 \***

Year	Opening stock	Additions	Depletion	Closing stock
tonnes				
1977	..	..	..	30 991.0
1978	30 991.0	1 271.0	1 267.0	30 995.0
1979	30 995.0	2 276.0	1 147.0	32 124.0
1980	32 124.0	2 750.0	1 070.0	33 804.0
1981	33 804.0	-583.0	1 129.0	32 092.0
1982	32 092.0	426.0	1 314.0	31 204.0
1983	31 204.0	1 418.0	1 197.0	31 425.0
1984	31 425.0	659.0	1 327.0	30 757.0
1985	30 757.0	-118.0	1 197.0	29 442.0
1986	29 442.0	-2 440.0	1 088.0	25 914.0
1987	25 914.0	664.0	1 475.0	25 103.0
1988	25 103.0	2 462.0	1 443.0	26 122.0
1989	26 122.0	-417.0	1 312.0	24 393.0
1990	24 393.0	-2 910.0	1 381.0	20 102.0
1991	20 102.0	-984.0	1 261.0	17 857.0
1992	17 857.0	-748.0	1 169.0	15 940.0
1993	15 940.0	515.0	879.0	15 576.0
1994	15 576.0	4 278.0	708.0	19 146.0
1995	19 146.0	1 172.0	1 245.0	19 073.0
1996	19 073.0	1 081.0	1 243.0	18 911.0
1997	18 911.0	-1 020.0	1 194.0	16 697.0

**Sources:**Natural Resources Canada, *Canadian Minerals Yearbook*, Ottawa.Statistics Canada, *Metal Mines*, Catalogue No. 26-223-XPB, Ottawa.

Table B.1.33

**Proven and Probable Zinc Reserves in Canada,  
1977-1997 \***

Year	Opening stock	Additions	Depletion	Closing stock
tonnes				
1977	..	..	..	26 953.0
1978	26 953.0	834.9	1 066.9	26 721.0
1979	26 721.0	959.9	1 099.9	26 581.0
1980	26 581.0	2 044.7	883.7	27 742.0
1981	27 742.0	2.2	911.2	26 833.0
1982	26 833.0	348.6	965.6	26 216.0
1983	26 216.0	1 084.7	987.7	26 313.0
1984	26 313.0	749.7	1 062.7	26 000.0
1985	26 000.0	-397.7	1 049.3	24 553.0
1986	24 553.0	-628.8	988.2	22 936.0
1987	22 936.0	-307.1	1 157.9	21 471.0
1988	21 471.0	609.0	1 370.0	20 710.0
1989	20 710.0	1 041.9	1 272.9	20 479.0
1990	20 479.0	-1 452.6	1 179.4	17 847.0
1991	17 847.0	-726.0	1 083.0	16 038.0
1992	16 038.0	-252.3	1 195.7	14 590.0
1993	14 590.0	613.7	990.7	14 213.0
1994	14 213.0	1 277.3	976.3	14 514.0
1995	14 514.0	1 292.7	1 094.7	14 712.0
1996	14 712.0	110.7	1 162.7	13 660.0
1997	13 660.0	-2 045.1	1 026.9	10 588.0

**Sources:**Natural Resources Canada, *Canadian Minerals Yearbook*, Ottawa.Statistics Canada, *Metal Mines*, Catalogue No. 26-223-XPB, Ottawa.



## Timber resources – physical data

Table B.1.34

### Timber Assets (Area) for Canada,<sup>1</sup> 1961-1997 \*

Year	Nonreserved accessible	Harvest	Fire	Mortality	Roads	Regeneration	Nonreserved accessible	Nonstocked accessible
	opening stock						closing stock	closing stock
				thousand hectares				
1961	124 513.8	773.2	598.7	271.4	23.2	1 711.5	124 558.8	15 115.2
1962	124 558.8	759.7	67.7	272.4	22.8	1 167.8	124 604.0	15 047.3
1963	124 604.0	787.1	..	273.3	23.6	1 127.8	124 647.7	14 979.9
1964	124 647.7	815.4	139.8	273.5	24.4	1 295.4	124 690.0	14 913.2
1965	124 690.0	817.7	..	274.1	24.5	1 158.2	124 731.9	14 846.8
1966	124 731.9	856.1	42.8	274.7	25.7	1 239.3	124 771.9	14 781.1
1967	124 771.9	847.2	134.8	274.7	25.4	1 322.1	124 811.9	14 715.7
1968	124 811.9	877.4	..	275.0	26.3	1 217.2	124 850.4	14 650.9
1969	124 850.4	932.7	181.0	274.9	28.0	1 452.5	124 886.3	14 586.9
1970	124 886.3	921.7	225.7	274.1	27.6	1 485.2	124 922.4	14 523.2
1971	124 922.4	885.2	236.2	273.5	26.5	1 458.7	124 959.6	14 459.4
1972	124 959.6	919.8	126.8	273.7	27.6	1 383.4	124 995.1	14 396.3
1973	124 995.1	1 049.3	19.6	273.9	31.5	1 404.3	125 025.1	14 334.9
1974	125 025.1	1 040.2	218.4	272.9	31.2	1 592.8	125 055.2	14 273.6
1975	125 055.2	863.1	34.5	272.1	25.9	1 232.4	125 092.0	14 210.9
1976	125 092.0	996.1	196.4	272.2	29.9	1 525.8	125 123.2	14 149.8
1977	125 123.2	1 050.3	158.1	272.1	31.5	1 540.8	125 151.9	14 089.5
1978	125 151.9	1 129.3	22.4	272.0	33.8	1 482.8	125 177.2	14 030.4
1979	125 177.2	1 178.8	81.1	271.3	35.3	1 589.6	125 200.2	13 972.0
1980	125 200.2	1 120.4	482.8	270.0	33.6	1 931.8	125 225.3	13 913.3
1981	125 225.3	1 089.0	451.5	269.3	32.6	1 868.5	125 251.3	13 854.7
1982	125 251.3	939.1	373.2	256.5	28.1	1 631.5	125 283.0	13 794.8
1983	125 283.0	1 136.7	176.5	245.2	34.1	1 616.0	125 306.5	13 737.2
1984	125 306.5	1 233.1	51.8	233.7	37.0	1 574.9	125 325.9	13 680.8
1985	125 325.9	1 225.1	62.8	222.4	36.7	1 566.5	125 345.3	13 624.7
1986	125 345.3	1 301.3	158.4	211.8	39.0	1 726.7	125 361.3	13 569.6
1987	125 361.3	1 374.6	111.3	201.7	41.2	1 741.7	125 374.2	13 515.5
1988	125 374.2	1 373.3	179.3	191.9	41.2	1 798.4	125 386.8	13 461.6
1989	125 386.8	1 318.9	1 228.8	181.4	39.5	2 783.2	125 401.4	13 407.5
1990	125 401.4	1 111.0	92.1	173.3	33.3	1 432.4	125 424.0	13 351.6
1991	125 424.0	1 103.3	270.2	166.5	33.1	1 595.8	125 446.6	13 295.8
1992	125 446.6	1 160.1	62.5	160.6	34.8	1 438.0	125 466.7	13 241.0
1993	125 466.7	1 218.5	123.7	154.7	36.5	1 551.0	125 484.1	13 186.9
1994	125 484.1	1 283.8	56.6	149.1	38.5	1 542.6	125 498.7	13 133.8
1995	125 498.7	1 323.2	382.9	143.4	39.7	1 902.0	125 511.5	13 081.4
1996	125 511.5	1 284.3	226.8	138.1	38.5	1 701.8	125 525.5	13 028.8
1997	125 525.5	1 345.9	238.0	133.3	40.4	1 768.8	125 536.8	12 977.2

#### Note:

1. Timber assets (area) for Canada exclude Prince Edward Island, Manitoba and Northwest Territories (including Nunavut) because the *Canada Forest Inventory (1994 version)* does not provide an age class distribution for forestland area for these provinces and territories.

#### Source:

Statistics Canada, Environment Accounts and Statistics Division.



Table B.1.35

**Timber Assets (Volume) for Canada,<sup>1</sup> 1961-1997 \***

Year	Opening stock	Harvest	Fire	Mortality	Roads	Regeneration	Closing stock
thousand cubic metres							
1961	14 696 652.7	92 186.8	63 587.8	42 002.9	2 765.6	141 896.5	14 638 006.1
1962	14 638 006.1	95 516.9	6 477.5	42 530.4	2 865.5	141 154.3	14 631 770.1
1963	14 631 770.1	98 413.2	..	43 037.5	2 952.4	140 538.2	14 627 905.2
1964	14 627 905.2	101 417.6	12 855.2	43 491.0	3 042.5	139 775.7	14 606 874.6
1965	14 606 874.6	102 266.6	..	43 960.4	3 068.0	139 580.7	14 597 160.3
1966	14 597 160.3	107 574.8	5 106.3	44 357.9	3 227.2	162 756.4	14 599 650.5
1967	14 599 650.5	106 377.4	15 293.8	44 700.9	3 191.3	153 242.9	14 583 329.9
1968	14 583 329.9	111 221.6	..	45 053.7	3 336.6	152 325.5	14 576 043.5
1969	14 576 043.5	120 213.5	22 891.2	45 277.1	3 606.4	155 417.4	14 539 472.7
1970	14 539 472.7	120 120.0	23 708.3	45 497.6	3 603.6	152 393.8	14 498 937.0
1971	14 498 937.0	118 052.0	27 602.6	45 716.7	3 541.6	154 830.7	14 458 854.9
1972	14 458 854.9	122 261.0	12 130.3	45 940.4	3 667.8	156 741.7	14 431 597.0
1973	14 431 597.0	142 729.0	2 775.0	46 050.2	4 281.9	151 779.1	14 387 540.1
1974	14 387 540.1	135 778.0	19 708.6	46 075.9	4 073.3	157 152.4	14 339 056.6
1975	14 339 056.6	113 193.0	3 378.9	46 357.0	3 395.8	165 237.7	14 337 969.7
1976	14 337 969.7	137 345.0	17 966.1	46 463.0	4 120.4	160 807.8	14 292 883.1
1977	14 292 883.1	143 446.0	15 055.5	46 536.6	4 303.4	158 833.8	14 242 375.5
1978	14 242 375.5	154 034.0	3 667.0	46 566.3	4 621.0	157 985.6	14 191 472.7
1979	14 191 472.7	159 750.0	9 113.2	46 571.9	4 792.5	160 856.0	14 132 101.1
1980	14 132 101.1	152 908.0	49 755.0	46 515.1	4 587.2	156 611.5	14 034 947.3
1981	14 034 947.3	142 562.0	51 859.7	45 949.5	4 276.9	162 430.8	13 952 730.0
1982	13 952 730.0	125 347.0	50 512.3	45 479.4	3 760.4	167 197.9	13 894 828.8
1983	13 894 828.8	154 082.0	16 226.1	44 881.1	4 622.5	162 059.2	13 837 076.4
1984	13 837 076.4	165 726.0	5 661.2	44 292.4	4 971.8	163 050.4	13 779 475.4
1985	13 779 475.4	166 594.0	7 622.0	43 735.6	4 997.8	169 651.6	13 726 177.7
1986	13 726 177.7	175 063.0	13 271.9	43 135.7	5 251.9	168 830.8	13 658 286.0
1987	13 658 286.0	189 318.0	11 345.1	42 510.2	5 679.5	162 814.7	13 572 247.9
1988	13 572 247.9	188 018.9	14 510.4	41 893.7	5 640.6	165 144.3	13 487 328.5
1989	13 487 328.5	184 192.7	98 162.2	41 144.6	5 525.8	164 348.0	13 322 651.3
1990	13 322 651.3	157 072.2	10 722.2	40 759.6	4 712.2	170 429.7	13 279 814.8
1991	13 279 814.8	156 998.3	23 201.9	40 390.3	4 709.9	175 351.2	13 229 865.5
1992	13 229 865.5	165 742.9	5 654.4	39 999.2	4 972.3	174 228.0	13 187 724.7
1993	13 187 724.7	171 229.8	11 996.0	39 593.8	5 136.9	175 799.9	13 135 568.0
1994	13 135 568.0	177 680.7	6 089.2	39 179.5	5 330.4	201 387.7	13 108 675.9
1995	13 108 675.9	181 699.2	36 726.8	38 726.2	5 451.0	170 369.8	13 016 442.4
1996	13 016 442.4	176 371.7	22 358.4	38 321.2	5 291.1	175 852.1	12 949 952.1
1997	12 949 952.1	181 171.1	24 292.0	37 882.0	5 435.1	171 847.6	12 873 019.5

**Note:**

1. Timber assets (volume) for Canada exclude Prince Edward Island, Manitoba and Northwest Territories (including Nunavut) because the *Canada Forest Inventory (1994 version)* does not provide an age class distribution for forestland volume for these provinces and territories.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.



## B.2 Use of Land Resources<sup>1</sup>

Table B.2.1

### Canada Land Inventory: Soil Capability for Agriculture by Province and Territory

Province/Territory	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Organic	Unclassed	Not classified	Total
square kilometres											
Newfoundland	-	-	19	166	915	2 074	6 441	2 179	14 469	379 457	405 720
Prince Edward Island	-	2 616	1 415	498	761	-	277	67	2	25	5 660
Nova Scotia	-	1 663	9 829	4 244	822	133	35 160	1 163	9	2 467	55 490
New Brunswick	-	1 605	11 511	20 321	17 003	115	18 386	1 328	1 153	2 018	73 440
Quebec	196	9 071	12 772	25 805	16 586	107	205 996	15 169	1 321	1 253 658	1 540 680
Ontario	21 568	22 177	29 088	26 247	19 153	11 403	112 213	25 633	7 827	793 272	1 068 580
Manitoba	1 625	25 306	24 407	23 941	23 238	20 922	10 886	47 417	38 582	433 626	649 950
Saskatchewan	9 997	58 745	94 247	38 931	87 363	39 501	2 255	27 886	11 270	282 135	652 330
Alberta	7 865	38 371	61 053	92 796	110 931	39 307	41 914	59 920	26 589	182 445	661 190
British Columbia	211	2 355	6 920	17 017	66 717	54 191	152 548	..	..	647 842	947 800
Yukon Territory	..	..	..	..	..	..	..	..	..	483 450	483 450
Northwest Territories <sup>1</sup>	..	..	..	..	..	..	..	..	..	3 426 320	3 426 320
<b>Canada</b>	<b>41 461</b>	<b>161 908</b>	<b>251 261</b>	<b>249 965</b>	<b>343 488</b>	<b>167 752</b>	<b>586 077</b>	<b>180 762</b>	<b>101 222</b>	<b>7 886 715</b>	<b>9 970 610</b>

#### Notes:

Figures may not add up to totals due to rounding.

The *Canada Land Inventory* soil capability classes are:

Class 1 - Soils in this class have no significant limitations for crops.

Class 2 - Soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices.

Class 3 - Soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices.

Class 4 - Soils in this class have severe limitations that restrict the range of crops, or require special conservation practices, or both.

Class 5 - Soils in this class have very severe limitations that restrict their capability to produce perennial forage crops.

Class 6 - Soils in this class are only capable of producing perennial forage crops, and improvement practices are not feasible.

Class 7 - Soils in this class have no capability for cultivation or permanent pasture.

Organic - Soils in this class are peatlands, bogs and marshes capable of supporting agricultural production and can be distinguished from mineral soils by their high organic content.

Unclassed - Unclassed lands are unmapped areas, water, forest reserves, national parks, urban areas and provincial parks.

1. Includes Nunavut.

#### Source:

Environment Canada, Lands Directorate, 1982, *Agricultural Land Use Change in Canada*, Catalogue No. 73-1/21E, Ottawa.

Table B.2.2

### Land Cover by Ecozone, 1992

Ecozone	Barren land	Broadleaf forest	Coniferous forest	Cropland	Lakes	Other covers	Mixed Perennial forest	Rangeland/ice/snow	pasture	Rivers	Transitional forest	Urban Tundra	built-up	Total
square kilometres														
Arctic Cordillera	127 794	-	-	-	2 747	428	-	111 375	-	1 039	-	13 067	-	256 449
Atlantic Maritime	2 047	24 387	55 449	15 126	4 427	205	99 517	-	-	834	673	-	1 280	203 946
Boreal Cordillera	43 570	2 460	255 796	-	9 511	11	20 629	12 132	-	3 759	-	122 517	-	470 384
Boreal Plains	131	135 230	258 326	83 824	66 465	26	168 777	-	20 677	4 558	817	-	229	739 059
Boreal Shield	13 974	74 066	995 311	7 289	193 143	12 634	502 494	-	-	18 548	112 904	126	926	1 931 415
Hudson Plains	-	5	36 963	-	10 009	5 585	1 946	-	-	4 726	277 754	20 092	-	357 079
Mixed Wood Plains	29	3 920	489	70 123	80 974	3 474	24 814	-	-	287	-	-	7 673	191 783
Montane Cordillera	46 622	15 240	321 679	785	10 942	18	69 325	2 881	10 390	3 221	-	8 568	163	489 833
Northern Arctic	1 029 482	-	-	-	84 233	2 763	-	44 810	-	12 799	-	328 741	5	1 502 832
Pacific Maritime	25 436	933	133 632	733	2 802	61	23 045	21 143	-	984	265	818	1 091	210 941
Prairie	117	14 004	438	315 418	8 505	1	1 683	-	120 944	1 656	-	-	3 715	466 480
Southern Arctic	266 702	1	941	-	98 481	3 999	16	-	-	3 927	36 407	433 260	-	843 734
Taiga Plains	6 478	27 564	200 950	12	75 700	49	162 802	-	-	5 861	152 387	21 367	4	653 173
Taiga Shield	11 580	202	130 837	-	202 915	1 324	16 548	-	-	12 036	683 971	327 571	12	1 386 993
Tundra Cordillera	70 213	822	97 174	-	1 578	3	2 226	38	-	2 203	18 586	73 668	-	266 511
<b>Canada</b>	<b>1 644 172</b>	<b>298 831</b>	<b>2 487 983</b>	<b>493 309</b>	<b>852 431</b>	<b>30 580</b>	<b>1 093 821</b>	<b>192 378</b>	<b>152 011</b>	<b>76 437</b>	<b>1 283 764</b>	<b>1 349 795</b>	<b>15 096</b>	<b>9 970 610</b>

#### Note:

Figures may not add up to totals due to rounding.

#### Source:

Statistics Canada, Environment Accounts and Statistics Division.

1. The symbol ♣ beside a table title name indicates that there is more data associated with this table on the CD-ROM included with this publication.





Table B.2.3

**Dominant Economic Land Use Classes by Ecozone, 1991**

Ecozone	Urban	Forest	Agriculture	Roads	Railways	Utilities	Other uses	Lakes	Rivers	Total
square kilometres										
Arctic Cordillera	-	-	-	-	-	-	252 917	2 552	980	256 449
Atlantic Maritime	2 657	172 176	21 407	383	186	404	1 508	4 404	820	203 946
Boreal Cordillera	3	278 943	7	112	9	84	177 954	9 512	3 760	470 384
Boreal Plains	823	530 233	134 785	688	220	511	712	66 517	4 569	739 059
Boreal Shield	3 358	1 533 066	15 765	764	416	914	167 728	191 101	18 302	1 931 415
Hudson Plains	14	38 916	1	7	14	1	303 392	10 009	4 725	357 079
Mixed Wood Plains	9 726	29 227	63 900	338	276	385	84 741	2 902	288	191 783
Montane Cordillera	950	406 518	16 995	349	167	246	50 438	10 947	3 223	489 833
Northern Arctic	-	-	-	3	-	-	1 404 717	85 172	12 940	1 502 832
Pacific Maritime	1 736	156 112	1 622	111	41	80	47 489	2 776	974	210 941
Prairie	3 803	15 778	418 505	1 083	661	910	15 568	8 513	1 659	466 480
Southern Arctic	-	965	-	3	-	-	739 822	99 002	3 942	843 734
Taiga Plains	9	392 738	147	78	17	33	178 072	76 184	5 893	653 173
Taiga Shield	23	147 708	-	23	14	23	1 023 649	203 504	12 049	1 386 993
Tundra Cordillera	-	100 325	-	14	-	-	162 386	1 579	2 207	266 511
<b>Total</b>	<b>23 103</b>	<b>3 802 704</b>	<b>673 134</b>	<b>3 957</b>	<b>2 023</b>	<b>3 592</b>	<b>4 611 092</b>	<b>774 674</b>	<b>76 331</b>	<b>9 970 610</b>

Note:

Figures may not add up to totals due to rounding.

Source:

Statistics Canada, Environment Accounts and Statistics Division.

Table B.2.4

**Land Cover by Provincial and Territorial Ecozone, 1992**

Provincial/ Territorial ecozone	Barren land	Broadleaf forest	Coniferous forest	Cropland	Lakes	Other covers	Mixed Perennial forest ice/snow	Rangeland/ pasture	Rivers	Transitional forest	Tundra	Urban built- up	Total
square kilometres													
<b>Newfoundland</b>													
Arctic Cordillera	13 515	-	-	-	305	18	-	-	-	93	-	4 694	18 625
Boreal Shield	11 846	-	60 610	-	7 417	395	34 942	-	1 315	40 823	125	308	157 781
Taiga Shield	6 388	-	50 782	-	25 050	343	4 784	-	2 471	82 963	56 534	-	229 314
<b>Total</b>	<b>31 749</b>	<b>-</b>	<b>111 391</b>	<b>-</b>	<b>32 772</b>	<b>755</b>	<b>39 726</b>	<b>-</b>	<b>3 879</b>	<b>123 786</b>	<b>61 353</b>	<b>308</b>	<b>405 720</b>
<b>Prince Edward Island</b>													
Atlantic Maritime	44	381	791	2 904	271	9	1 186	-	-	3	-	71	5 660
<b>Total</b>	<b>44</b>	<b>381</b>	<b>791</b>	<b>2 904</b>	<b>271</b>	<b>9</b>	<b>1 186</b>	<b>-</b>	<b>-</b>	<b>3</b>	<b>-</b>	<b>71</b>	<b>5 660</b>
<b>Nova Scotia</b>													
Atlantic Maritime	1 070	8 399	27 011	2 670	1 961	163	12 969	-	-	177	673	-	55 490
<b>Total</b>	<b>1 070</b>	<b>8 399</b>	<b>27 011</b>	<b>2 670</b>	<b>1 961</b>	<b>163</b>	<b>12 969</b>	<b>-</b>	<b>-</b>	<b>177</b>	<b>673</b>	<b>-</b>	<b>55 490</b>
<b>New Brunswick</b>													
Atlantic Maritime	870	9 341	18 494	1 338	1 494	26	41 222	-	-	294	-	362	73 440
<b>Total</b>	<b>870</b>	<b>9 341</b>	<b>18 494</b>	<b>1 338</b>	<b>1 494</b>	<b>26</b>	<b>41 222</b>	<b>-</b>	<b>-</b>	<b>294</b>	<b>-</b>	<b>362</b>	<b>73 440</b>
<b>Quebec</b>													
Arctic Cordillera	12 169	-	-	-	651	-	-	-	-	174	-	4 555	17 549
Atlantic Maritime	63	6 266	9 154	8 214	701	8	44 139	-	-	361	-	451	69 356
Boreal Shield	2 063	41 857	315 939	4 930	52 550	96	195 315	-	-	6 302	49 150	482	668 684
Hudson Plains	-	4	6 957	-	2 090	2	10	-	-	379	27 976	-	37 418
Mixed Wood Plains	-	1 391	150	16 816	346	38	6 933	-	-	95	-	2 654	28 422
Northern Arctic	13 565	-	-	-	1 449	2	-	-	-	398	-	21 388	36 803
Southern Arctic	33 805	-	-	-	20 328	3	-	-	-	1 490	218	98 101	153 945
Taiga Shield	2 264	16	47 969	-	67 761	21	2 014	-	-	5 594	275 527	127 338	528 504
<b>Total</b>	<b>63 929</b>	<b>49 533</b>	<b>380 168</b>	<b>29 960</b>	<b>145 875</b>	<b>170</b>	<b>248 412</b>	<b>-</b>	<b>-</b>	<b>14 792</b>	<b>352 871</b>	<b>251 383</b>	<b>1 540 680</b>
<b>Ontario</b>													
Boreal Shield	66	20 255	307 979	1 393	59 245	12 090	238 755	-	-	6 278	12 995	134	659 190
Hudson Plains	-	1	29 309	-	5 936	2 255	1 936	-	-	3 112	203 480	-	246 029
Mixed Wood Plains	29	2 529	339	53 307	80 628	3 436	17 881	-	-	193	-	5 019	163 361
<b>Total</b>	<b>94</b>	<b>22 785</b>	<b>337 627</b>	<b>54 700</b>	<b>145 809</b>	<b>17 781</b>	<b>258 572</b>	<b>-</b>	<b>-</b>	<b>9 583</b>	<b>216 475</b>	<b>5 153</b>	<b>1 068 580</b>



Table B.2.4

**Land Cover by Provincial and Territorial Ecozone, 1992 (continued)**

Provincial/ Territorial ecozone	Barren land	Broadleaf forest	Coniferous forest	Cropland	Lakes	Other covers	Mixed forest	Perennial ice/snow	Rangeland/ pasture	Rivers	Transitional forest	Tundra	Urban built- up	Total
square kilometres														
<b>Manitoba</b>														
Boreal Plains	97	21 560	38 479	11 789	41 578	19	11 476	-	509	393	-	-	55	125 956
Boreal Shield	-	11 951	173 531	966	34 676	20	19 494	-	-	2 543	8 859	-	1	252 042
Hudson Plains	-	-	696	-	1 939	11	-	-	-	1 228	46 297	20 092	-	70 265
Prairie	117	11 059	70	46 686	4 051	-	400	-	6 457	373	-	-	757	69 970
Southern Arctic	-	-	-	-	116	3	-	-	-	28	-	1 297	-	1 445
Taiga Shield	-	-	10 752	-	17 355	9	36	-	-	1 750	71 467	28 903	-	130 273
<b>Total</b>	<b>213</b>	<b>44 570</b>	<b>223 529</b>	<b>59 441</b>	<b>99 715</b>	<b>64</b>	<b>31 405</b>	<b>-</b>	<b>6 966</b>	<b>6 316</b>	<b>126 624</b>	<b>50 293</b>	<b>813</b>	<b>649 950</b>
<b>Saskatchewan</b>														
Boreal Plains	-	24 824	73 757	34 654	11 868	2	28 652	-	2 610	1 122	-	-	101	177 590
Boreal Shield	-	-	133 886	-	36 883	30	13 163	-	-	2 032	1 077	1	-	187 072
Prairie	-	2 761	68	175 974	2 857	-	150	-	58 081	488	-	-	685	241 063
Taiga Shield	-	65	5 195	-	7 595	-	3 125	-	-	556	30 064	5	-	46 605
<b>Total</b>	<b>-</b>	<b>27 651</b>	<b>212 905</b>	<b>210 628</b>	<b>59 203</b>	<b>32</b>	<b>45 089</b>	<b>-</b>	<b>60 691</b>	<b>4 198</b>	<b>31 141</b>	<b>6</b>	<b>786</b>	<b>652 330</b>
<b>Alberta</b>														
Boreal Plains	33	82 785	126 447	33 537	11 792	5	105 573	-	17 558	2 503	-	-	72	380 305
Boreal Shield	-	2	3 366	-	2 371	3	824	-	-	79	-	-	-	6 646
Montane Cordillera	14 107	1 251	19 896	231	282	10	9 961	379	928	209	-	-	2	47 257
Prairie	-	184	300	92 758	1 597	-	1 133	-	56 407	795	-	-	2 273	155 448
Taiga Plains	-	9 726	25 595	12	1 237	-	25 437	-	-	536	-	-	-	62 543
Taiga Shield	-	120	5 038	-	910	-	2 809	-	-	115	-	-	-	8 992
<b>Total</b>	<b>14 140</b>	<b>94 069</b>	<b>180 643</b>	<b>126 539</b>	<b>18 189</b>	<b>19</b>	<b>145 737</b>	<b>379</b>	<b>74 893</b>	<b>4 235</b>	<b>-</b>	<b>-</b>	<b>2 347</b>	<b>661 190</b>
<b>British Columbia</b>														
Boreal Cordillera	29 658	2 348	95 489	-	3 397	10	14 988	2 424	-	1 536	-	42 311	-	192 162
Boreal Plains	-	5 651	15 620	3 844	90	-	13 478	-	-	425	-	-	-	39 109
Montane Cordillera	32 515	13 989	301 783	554	10 659	8	59 364	2 501	9 462	3 012	-	8 568	161	442 576
Pacific Maritime	25 411	933	133 632	733	2 802	61	23 045	16 702	-	984	265	818	1 091	206 476
Taiga Plains	3	12 284	17 753	-	1 029	1	35 814	-	-	594	-	-	-	67 477
<b>Total</b>	<b>87 587</b>	<b>35 205</b>	<b>564 277</b>	<b>5 131</b>	<b>17 978</b>	<b>80</b>	<b>146 689</b>	<b>21 627</b>	<b>9 462</b>	<b>6 551</b>	<b>265</b>	<b>51 697</b>	<b>1 252</b>	<b>947 800</b>
<b>Yukon Territory</b>														
Boreal Cordillera	13 799	96	157 196	-	6 107	1	4 904	9 708	-	2 202	-	79 616	-	273 627
Pacific Maritime	24	-	-	-	-	-	-	4 440	-	-	-	-	-	4 465
Southern Arctic	11	-	-	-	132	4	-	-	-	98	-	4 484	-	4 729
Taiga Plains	107	77	12 347	-	435	12	1 692	-	-	203	1 608	1 818	-	18 299
Tundra Cordillera	29 417	68	81 554	-	1 401	-	1 677	38	-	1 625	18 531	48 019	-	182 330
<b>Total</b>	<b>43 358</b>	<b>240</b>	<b>251 096</b>	<b>-</b>	<b>8 075</b>	<b>17</b>	<b>8 273</b>	<b>14 186</b>	<b>-</b>	<b>4 127</b>	<b>20 139</b>	<b>133 937</b>	<b>-</b>	<b>483 450</b>
<b>Northwest Territories<sup>1</sup></b>														
Arctic Cordillera	102 109	-	-	-	1 792	410	-	111 375	-	772	-	3 817	-	220 275
Boreal Cordillera	113	16	3 111	-	7	-	737	-	-	21	-	590	-	4 596
Boreal Plains	1	409	4 022	-	1 137	-	9 598	-	-	115	817	-	-	16 099
Hudson Plains	-	-	-	-	43	3 317	-	-	-	7	-	-	-	3 367
Northern Arctic	1 015 916	-	-	-	82 784	2 761	-	44 810	-	12 401	-	307 353	5	1 466 029
Southern Arctic	232 885	1	941	-	77 906	3 988	16	-	-	2 310	36 189	329 377	-	683 615
Taiga Plains	6 368	5 477	145 254	-	72 999	36	99 860	-	-	4 529	150 779	19 549	4	504 854
Taiga Shield	2 927	1	11 102	-	84 244	951	3 781	-	-	1 549	223 949	114 791	11	443 306
Tundra Cordillera	40 796	754	15 620	-	176	3	549	-	-	579	55	25 649	-	84 181
<b>Total</b>	<b>1 401 117</b>	<b>6 657</b>	<b>180 050</b>	<b>-</b>	<b>321 088</b>	<b>11 466</b>	<b>114 540</b>	<b>156 185</b>	<b>-</b>	<b>22 282</b>	<b>411 789</b>	<b>801 126</b>	<b>20</b>	<b>3 426 320</b>
<b>Canada</b>	<b>1 644 172</b>	<b>298 831</b>	<b>2 487 983</b>	<b>493 309</b>	<b>852 431</b>	<b>30 580</b>	<b>1 093 821</b>	<b>192 378</b>	<b>152 011</b>	<b>76 437</b>	<b>1 283 764</b>	<b>1 349 795</b>	<b>15 096</b>	<b>9 970 610</b>

**Notes:**

Figures may not add up to totals due to rounding.

1. Includes Nunavut.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.



Table B.2.5

**Dominant Economic Land Use Classes by Provincial and Territorial Ecozone, 1991**

Provincial/Territorial ecozone	Urban	Forest	Agriculture	Roads	Railways	Utilities	Other uses	Lakes	Rivers	Total
square kilometres										
<b>Newfoundland</b>										
Arctic Cordillera	-	-	-	-	-	-	18 227	305	93	18 625
Boreal Shield	614	95 553	474	115	17	67	52 211	7 417	1 315	157 781
Taiga Shield	9	55 565	-	11	12	-	146 195	25 050	2 471	229 314
<b>Total</b>	<b>622</b>	<b>151 118</b>	<b>474</b>	<b>126</b>	<b>29</b>	<b>67</b>	<b>216 633</b>	<b>32 772</b>	<b>3 879</b>	<b>405 720</b>
<b>Prince Edward Island</b>										
Atlantic Maritime	96	2 476	2 589	14	12	14	172	285	3	5 660
<b>Total</b>	<b>96</b>	<b>2 476</b>	<b>2 589</b>	<b>14</b>	<b>12</b>	<b>14</b>	<b>172</b>	<b>285</b>	<b>3</b>	<b>5 660</b>
<b>Nova Scotia</b>										
Atlantic Maritime	763	48 274	3 970	129	54	118	48	1 957	177	55 490
<b>Total</b>	<b>763</b>	<b>48 274</b>	<b>3 970</b>	<b>129</b>	<b>54</b>	<b>118</b>	<b>48</b>	<b>1 957</b>	<b>177</b>	<b>55 490</b>
<b>New Brunswick</b>										
Atlantic Maritime	869	66 675	3 756	117	71	175	-	1 485	292	73 440
<b>Total</b>	<b>869</b>	<b>66 675</b>	<b>3 756</b>	<b>117</b>	<b>71</b>	<b>175</b>	<b>-</b>	<b>1 485</b>	<b>292</b>	<b>73 440</b>
<b>Quebec</b>										
Arctic Cordillera	-	-	-	-	-	-	16 914	501	134	17 549
Atlantic Maritime	928	54 751	11 092	123	49	98	1 288	677	349	69 356
Boreal Shield	1 290	532 086	7 694	282	104	335	70 279	50 552	6 062	668 684
Hudson Plains	-	6 974	-	5	-	-	27 969	2 091	379	37 418
Mixed Wood Plains	3 484	8 477	15 511	121	69	112	208	346	95	28 422
Northern Arctic	-	-	-	-	-	-	34 954	1 450	398	36 803
Southern Arctic	-	-	-	-	-	-	132 117	20 337	1 491	153 945
Taiga Shield	8	50 022	-	6	3	5	405 070	67 793	5 596	528 504
<b>Total</b>	<b>5 711</b>	<b>652 310</b>	<b>34 296</b>	<b>537</b>	<b>225</b>	<b>550</b>	<b>688 800</b>	<b>143 747</b>	<b>14 504</b>	<b>1 540 680</b>
<b>Ontario</b>										
Boreal Shield	1 342	549 152	6 125	280	246	402	36 201	59 171	6 271	659 190
Hudson Plains	8	31 246	-	1	5	-	205 721	5 936	3 112	246 029
Mixed Wood Plains	6 242	20 750	48 389	217	207	273	84 534	2 556	193	163 361
<b>Total</b>	<b>7 593</b>	<b>601 148</b>	<b>54 514</b>	<b>498</b>	<b>458</b>	<b>676</b>	<b>326 455</b>	<b>67 663</b>	<b>9 575</b>	<b>1 068 580</b>
<b>Manitoba</b>										
Boreal Plains	101	65 421	18 251	115	41	67	-	41 566	393	125 956
Boreal Shield	88	204 918	1 437	67	48	105	8 171	34 667	2 542	252 042
Hudson Plains	6	696	1	1	9	1	66 385	1 939	1 228	70 265
Prairie	783	11 173	53 158	174	146	112	-	4 050	373	69 970
Southern Arctic	-	-	-	-	-	-	1 300	116	28	1 445
Taiga Shield	-	10 784	-	-	-	-	100 388	17 350	1 750	130 273
<b>Total</b>	<b>977</b>	<b>292 993</b>	<b>72 847</b>	<b>357</b>	<b>244</b>	<b>286</b>	<b>176 244</b>	<b>99 688</b>	<b>6 314</b>	<b>649 950</b>
<b>Saskatchewan</b>										
Boreal Plains	162	121 547	42 551	205	67	58	-	11 878	1 123	177 590
Boreal Shield	24	147 171	36	20	1	6	867	36 914	2 033	187 072
Prairie	938	2 981	226 068	564	345	389	6 430	2 859	488	241 063
Taiga Shield	6	8 392	-	-	-	-	30 049	7 601	557	46 605
<b>Total</b>	<b>1 131</b>	<b>280 091</b>	<b>268 655</b>	<b>789</b>	<b>412</b>	<b>453</b>	<b>37 346</b>	<b>59 253</b>	<b>4 201</b>	<b>652 330</b>
<b>Alberta</b>										
Boreal Plains	500	298 545	66 131	315	99	364	-	11 838	2 512	380 305
Boreal Shield	-	4 186	-	-	-	-	-	2 380	79	6 646
Montane Cordillera	85	31 230	2 577	37	13	25	12 796	284	210	47 257
Prairie	2 082	1 624	139 279	345	170	408	9 139	1 603	798	155 448
Taiga Plains	-	60 607	123	13	5	16	-	1 242	538	62 543
Taiga Shield	-	7 964	-	-	-	-	-	914	115	8 992
<b>Total</b>	<b>2 667</b>	<b>404 155</b>	<b>208 110</b>	<b>711</b>	<b>287</b>	<b>813</b>	<b>21 934</b>	<b>18 261</b>	<b>4 252</b>	<b>661 190</b>
<b>British Columbia</b>										
Boreal Cordillera	3	112 871	7	41	7	20	74 277	3 399	1 537	192 162
Boreal Plains	60	30 599	7 852	48	13	21	-	90	425	39 109
Montane Cordillera	864	375 288	14 418	312	155	221	37 642	10 664	3 013	442 576
Pacific Maritime	1 736	156 112	1 622	111	41	79	43 024	2 776	974	206 476
Taiga Plains	9	65 782	25	15	6	17	-	1 029	594	67 477
<b>Total</b>	<b>2 673</b>	<b>740 652</b>	<b>23 923</b>	<b>527</b>	<b>222</b>	<b>358</b>	<b>154 943</b>	<b>17 957</b>	<b>6 544</b>	<b>947 800</b>
<b>Yukon Territory</b>										
Boreal Cordillera	-	162 182	-	72	3	64	102 999	6 106	2 201	273 627





Table B.2.5

**Dominant Economic Land Use Classes by Provincial and Territorial Ecozone, 1991 (continued)**

Provincial/Territorial ecozone	Urban	Forest	Agriculture	Roads	Railways	Utilities	Other uses	Lakes	Rivers	Total
square kilometres										
Pacific Maritime	..	-	..	-	-	-	4 465	-	-	4 465
Southern Arctic	..	-	..	-	-	-	4 500	132	98	4 729
Taiga Plains	..	14 115	..	-	-	-	3 546	435	203	18 299
Tundra Cordillera	..	83 292	..	11	-	-	96 001	1 401	1 625	182 330
<b>Total</b>	..	<b>259 588</b>	..	<b>83</b>	<b>3</b>	<b>64</b>	<b>211 511</b>	<b>8 074</b>	<b>4 127</b>	<b>483 450</b>
<b>Northwest Territories<sup>1</sup></b>										
Arctic Cordillera	..	-	..	-	-	-	217 775	1 746	753	220 275
Boreal Cordillera	..	3 890	..	-	-	-	678	7	21	4 596
Boreal Plains	..	14 121	..	5	-	1	712	1 145	116	16 099
Hudson Plains	..	-	..	-	-	-	3 316	43	7	3 367
Northern Arctic	..	-	..	3	-	-	1 369 763	83 722	12 541	1 466 029
Southern Arctic	..	965	..	3	-	-	601 904	78 418	2 325	683 615
Taiga Plains	..	252 235	..	50	6	1	174 526	73 478	4 559	504 854
Taiga Shield	..	14 980	..	6	-	18	341 946	84 797	1 560	443 306
Tundra Cordillera	..	17 033	..	3	-	-	66 385	177	582	84 181
<b>Total</b>	..	<b>303 224</b>	..	<b>69</b>	<b>7</b>	<b>20</b>	<b>2 777 005</b>	<b>323 533</b>	<b>22 463</b>	<b>3 426 320</b>
<b>Total</b>	<b>23 103</b>	<b>3 802 704</b>	<b>673 134</b>	<b>3 957</b>	<b>2 023</b>	<b>3 592</b>	<b>4 519 981</b>	<b>865 785</b>	<b>76 331</b>	<b>9 970 610</b>

**Notes:**

Figures may not add up to totals due to rounding.

1. Includes Nunavut.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.

Table B.2.6

**Agricultural Land Use, 1901-1996**

Year	Cropland	Improved pasture	Summerfallow	Other land	Unimproved agricultural land	Total agricultural land
million hectares						
1901	8.1	..	..	4.1	13.5	25.7
1911	14.4	..	1.0	4.3	24.4	44.1
1921	20.2	3.1	4.8	0.5	28.4	57.0
1931	23.6	3.2	6.8	1.1	31.3	66.0
1941	22.8	3.4	9.5	1.4	33.1	70.2
1951	25.2	4.0	8.9	1.1	31.2	70.4
1961	25.3	4.1	11.4	1.0	28.0	69.8
1971	27.8	4.1	10.8	1.0	25.0	68.7
1976	28.3	4.1	10.9	0.9	24.2	68.4
1981	30.9	4.1	9.7	1.4	19.8	65.9
1986	33.2	3.6	8.5	0.7	21.8	67.8
1991	33.5	4.1	7.9	..	..	67.8
1996	34.9	4.3	6.3	..	..	68.1

**Note:**

Figures may not add up to totals due to rounding.

**Source:**Statistics Canada, *Handbook of Agricultural Statistics*, Catalogue No. 21-503, Ottawa.

Table B.2.7

**Land Cover by Province and Territory, 1992**

Province/ Territory	Barren land	Broadleaf forest	Coniferous forest	Cropland	Lakes	Other covers	Mixed forest	Perennial ice/snow	Rangeland/ pasture	Rivers	Transitional forest	Tundra	Urban built-up	Total
square kilometres														
Nfld.	31 749	-	111 392	-	32 772	756	39 726	-	-	3 879	123 786	61 353	309	405 720
P.E.I.	44	381	791	2 904	271	9	1 187	-	-	3	-	-	71	5 660
N.S.	1 070	8 399	27 011	2 670	1 961	163	12 969	-	-	177	673	-	397	55 490
N.B.	870	9 341	18 494	1 338	1 494	26	41 222	-	-	294	-	-	362	73 440
Que.	63 929	49 533	380 168	29 960	145 875	170	248 412	-	-	14 792	352 871	251 383	3 587	1 540 680
Ont.	94	22 785	337 627	54 700	145 809	17 781	258 572	-	-	9 583	216 475	-	5 153	1 068 580
Man.	214	44 570	223 529	59 441	99 715	64	31 406	-	6 966	6 316	126 624	50 293	814	649 950
Sask.	-	27 651	212 905	210 628	59 203	32	45 089	-	60 691	4 198	31 141	6	786	652 330
Alta.	14 140	94 069	180 643	126 539	18 189	19	145 737	379	74 893	4 235	-	-	2 347	661 190
B.C.	87 587	35 205	564 278	5 131	17 978	80	146 689	21 627	9 462	6 551	265	51 697	1 252	947 800
Y.T.	43 358	240	251 097	-	8 075	17	8 273	14 186	-	4 127	20 140	133 937	-	483 450
N.W.T. <sup>1</sup>	1 401 117	6 657	180 050	-	321 088	11 466	114 540	156 185	-	22 282	411 789	801 126	20	3 426 320
<b>Canada</b>	<b>1 644 172</b>	<b>298 831</b>	<b>2 487 983</b>	<b>493 309</b>	<b>852 431</b>	<b>30 580</b>	<b>1 093 821</b>	<b>192 378</b>	<b>152 011</b>	<b>76 437</b>	<b>1 283 764</b>	<b>1 349 795</b>	<b>15 096</b>	<b>9 970 610</b>

**Notes:**

Figures may not add up to totals due to rounding.

1. Includes Nunavut.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.

Table B.2.8

**Dominant Economic Land Use Classes by Province and Territory, 1991**

Province/Territory	Urban	Forest	Agriculture	Roads	Railways	Utilities	Other uses	Lakes	Rivers	Total
square kilometres										
Newfoundland	622	151 118	474	126	29	67	216 634	32 772	3 879	405 720
Prince Edward Island	96	2 476	2 589	14	12	14	172	285	3	5 660
Nova Scotia	763	48 274	3 970	129	54	118	48	1 957	177	55 490
New Brunswick	869	66 675	3 756	117	71	175	-	1 485	292	73 440
Quebec	5 711	652 310	34 296	537	225	550	688 800	143 747	14 504	1 540 680
Ontario	7 593	601 148	54 514	498	458	676	326 455	67 663	9 575	1 068 580
Manitoba	977	292 993	72 847	357	244	286	176 245	99 688	6 314	649 950
Saskatchewan	1 131	280 091	268 655	789	412	453	37 346	59 253	4 201	652 330
Alberta	2 667	404 155	208 110	711	287	813	21 934	18 261	4 252	661 190
British Columbia	2 673	740 652	23 923	527	222	358	154 943	17 957	6 544	947 800
Yukon Territory	..	259 588	..	83	3	64	211 511	8 074	4 127	483 450
Northwest Territories <sup>1</sup>	..	303 224	..	69	7	20	2 777 005	323 533	22 463	3 426 320
<b>Total</b>	<b>23 103</b>	<b>3 802 704</b>	<b>673 134</b>	<b>3 957</b>	<b>2 023</b>	<b>3 592</b>	<b>4 611 092</b>	<b>774 674</b>	<b>76 331</b>	<b>9 970 610</b>

**Notes:**

Figures may not add up to totals due to rounding.

1. Includes Nunavut.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.



Table B.2.9

**Urban Population Density by Province, Selected Years**

Province	1971	1981	1991	1996	Change 1971-1996
		persons per square kilometre			percent
Newfoundland	657	695	489	381	-42
Prince Edward Island	767	588	539	437	-43
Nova Scotia	826	778	631	525	-36
New Brunswick	584	590	397	336	-42
Quebec	1 143	1 135	937	791	-31
Ontario	1 144	1 171	1 087	1 015	-11
Manitoba	988	975	805	711	-28
Saskatchewan	652	637	551	472	-28
Alberta	840	831	761	651	-22
British Columbia	1 058	1 005	988	881	-17
<b>Total</b>	<b>1 030</b>	<b>1 021</b>	<b>903</b>	<b>799</b>	<b>-22</b>

Source:

Statistics Canada, Environment Accounts and Statistics Division.

Table B.2.10

**Urban Land Use by Province, Selected Years**

Province	1971	1981	1991	1996	Change 1971-1996
		square kilometres			percent
Newfoundland	455	479	622	825	81
Prince Edward Island	56	76	96	136	144
Nova Scotia	541	600	763	948	75
New Brunswick	618	599	869	1 078	74
Quebec	4 255	4 400	5 711	6 830	61
Ontario	5 545	6 019	7 593	9 017	63
Manitoba	695	749	977	1 126	62
Saskatchewan	752	884	1 131	1 312	74
Alberta	1 424	2 080	2 667	3 302	132
British Columbia	1 564	2 129	2 673	3 471	122
<b>Total</b>	<b>15 905</b>	<b>18 015</b>	<b>23 103</b>	<b>28 045</b>	<b>76</b>

Note:

Figures may not add up to totals due to rounding.

Source:

Statistics Canada, Environment Accounts and Statistics Division.





## B.3 Use of Materials and Energy<sup>1</sup>

### Energy

Table B.3.1

#### Energy Use by Sector and Fuel Type, 1996 \*

Sector	Coal	Natural gas	Motor gasoline	Aviation fuel <sup>1</sup>	Diesel fuel	Light fuel oil <sup>2</sup>	Liquified petroleum			Electricity	Coke <sup>4</sup>	Total
							fuel oil	gases <sup>3</sup>				
Business sector industries												
1 Agriculture and related services	-	52 112	51 353	-	103 653	1 529	-	10 459	31 994	-	251 100	
2 Fishing and trapping	-	414	7 962	346	6 134	333	-	12	482	-	15 683	
3 Logging and forestry	-	288	5 037	408	34 503	733	1 033	247	694	-	42 943	
4 Gold mines	2	533	133	-	5 078	30	283	1 478	8 086	-	15 623	
5 Other metal mines	26	4 002	324	-	7 698	591	1 067	2 726	18 766	1 093	36 293	
6 Iron mines	-	-	100	-	2 767	57	12 701	1	14 268	6 545	36 439	
7 Asbestos mines	-	-	26	-	578	9	1 396	10	1 095	-	3 114	
8 Other non-metal mines (except coal)	-	26 078	99	-	943	1 698	6	324	7 549	-	36 697	
9 Salt mines	-	1 890	2	-	153	2	339	9	544	-	2 939	
10 Coal mines	5 057	4 373	264	-	8 811	50	-	322	3 001	-	21 878	
11 Crude petroleum and natural gas	-	506 783	7 228	-	2 143	90	2 757	13 951	37 628	41 934	612 514	
12 Quarries and sand pits	-	868	468	-	4 513	423	103	158	1 565	-	8 098	
13 Services incidental to mineral extraction	-	2 959	3 742	883	4 735	598	3 160	-	4 039	-	20 116	
Sub-total, primary resource industries (1-13)	5 085	600 300	76 738	1 637	181 709	6 143	22 845	29 697	129 711	49 572	1 103 437	
14 Meat and meat products	-	8 978	155	-	537	94	490	466	4 199	-	14 919	
15 Poultry products	-	1 820	30	-	154	93	4	65	1 563	-	3 729	
16 Fish products	-	461	175	-	276	537	506	208	2 813	-	4 976	
17 Fruits and vegetables	-	5 984	57	-	178	61	3 726	124	2 191	-	12 321	
18 Dairy products	-	7 498	226	-	962	282	681	339	3 738	-	13 726	
19 Miscellaneous food products	2	19 287	254	-	746	409	341	329	6 792	-	28 160	
20 Feed	-	5 850	110	-	684	266	124	128	2 481	-	9 643	
21 Vegetable oil mills (excluding corn oil)	-	4 745	5	-	4	39	-	-	932	-	5 725	
22 Biscuits	-	1 239	5	-	7	8	-	18	414	-	1 691	
23 Bread and other bakery products	2	3 105	235	-	620	219	3	50	1 639	-	5 873	
24 Cane and beet sugar	-	4 238	1	-	6	66	1 071	6	433	255	6 076	
25 Soft drinks	-	1 370	551	-	413	93	-	58	822	-	3 307	
26 Distillery products	-	3 712	2	-	2	72	109	4	348	-	4 249	
27 Brewery products	-	4 363	53	-	297	167	289	3	1 443	-	6 615	
28 Wine	-	233	22	-	7	3	-	-	128	-	393	
29 Tobacco products	-	706	12	-	1	8	-	16	539	-	1 282	
30 Rubber products	-	4 867	99	-	23	616	88	204	3 667	-	9 564	
31 Plastic products	123	6 868	128	-	183	154	26	172	11 257	-	18 911	
32 Leather tanneries	-	314	7	-	8	9	-	13	97	-	448	
33 Footwear	-	219	9	-	8	20	2	3	373	-	634	
34 Miscellaneous leather and allied products	-	105	11	-	-	-	-	5	93	-	214	
35 Man-made fibre yarn and woven cloth	-	8 703	3	-	1	106	415	101	4 204	-	13 533	
36 Wool yarn and woven cloth	-	277	6	-	1	81	79	7	471	-	922	
37 Broad knitted fabrics	-	602	8	-	1	205	-	40	494	-	1 350	
38 Miscellaneous textile products	-	4 032	78	-	40	103	43	100	1 951	-	6 347	
39 Carpets, mats and rugs	-	1 672	2	-	-	115	182	80	541	-	2 592	
40 Clothing excluding hosiery	1	2 982	126	-	17	75	122	77	2 370	-	5 770	
41 Hosiery	-	458	-	-	-	8	-	-	462	-	928	
42 Sawmills, planing mill and shingle mill products	-	16 892	849	-	6 176	575	1 761	1 573	16 375	-	44 201	
43 Veneer and plywood	-	5 947	60	-	273	32	45	202	1 986	-	8 545	
44 Sash, door and other millwork	6	2 580	358	-	436	87	23	104	2 239	-	5 833	
45 Wooden boxes and coffins	-	229	46	-	107	16	8	41	282	-	729	
46 Other wood industries	-	4 180	73	-	353	800	160	147	3 614	-	9 327	

1. The symbol \* beside a table title name indicates that there is more data associated with this table on the CD-ROM included with this publication.



Table B.3.1  
**Energy Use by Sector and Fuel Type, 1996 \*** (continued)

Sector	terajoules										Total
	Coal	Natural gas	Motor gasoline	Aviation fuel <sup>1</sup>	Diesel fuel	Light fuel oil <sup>2</sup>	Heavy petroleum fuel oil	Liquified petroleum gases <sup>3</sup>	Electricity	Coke <sup>4</sup>	
47 Household furniture	-	1 761	56	-	79	61	25	68	543	-	2 593
48 Office furniture	-	1 037	12	-	32	1	16	18	479	-	1 595
49 Other furniture and fixtures	-	1 922	89	-	79	19	15	76	993	-	3 193
50 Pulp and paper	2 333	149 344	297	-	1 745	1 901	63 063	2 766	185 414	-	406 863
51 Asphalt roofing	-	2 232	-	-	10	-	-	11	353	-	2 606
52 Paper boxes and bags	-	3 431	104	-	229	204	170	118	1 710	-	5 966
53 Other converted paper products	2	2 941	28	-	72	25	131	68	2 144	-	5 411
54 Printing and publishing	4	6 032	471	-	52	81	56	238	5 044	-	11 978
55 Platemaking, typesetting and bindery	-	683	64	-	25	4	1	6	643	-	1 426
56 Primary steel	1 120	65 257	175	-	1 116	282	8 339	27 865	33 567	96 373	234 094
57 Steel pipes and tubes	-	1 878	35	-	30	4	2	20	1 130	-	3 099
58 Iron foundries	647	3 516	11	-	16	38	19	180	3 496	3 918	11 841
59 Non-ferrous metal smelting and refining	11 399	29 037	74	-	498	2 026	8 354	458	210 381	4 416	266 643
60 Aluminum rolling, casting and extruding	-	5 497	31	-	13	214	-	153	1 621	-	7 529
61 Copper and alloy rolling, casting and extruding	24	927	1	-	-	23	-	41	592	-	1 608
62 Other rolling, casting and extruding non-ferrous metal products	-	3 503	80	-	277	165	66	11	996	159	5 257
63 Power boilers and structural metals	-	3 179	210	-	343	102	25	190	1 314	-	5 363
64 Ornamental and architectural metal products	3	1 876	134	-	61	22	8	52	784	-	2 940
65 Stamped, pressed and coated metals	95	11 880	213	-	290	48	30	243	3 843	-	16 642
66 Wire and wire products	-	4 692	65	-	28	5	2	62	2 016	-	6 870
67 Hardware, tools and cutlery	13	1 618	154	-	57	32	4	45	1 411	-	3 334
68 Heating equipment	-	470	20	-	8	15	-	20	223	-	756
69 Machine shops	174	2 146	647	-	179	73	18	98	1 840	-	5 175
70 Other metal fabricating	2	4 406	105	-	46	48	32	166	1 988	-	6 793
71 Agricultural implements	-	1 716	45	-	112	36	2	41	690	-	2 642
72 Commercial refrigeration and air conditioning equipment	-	308	3	-	4	7	-	15	160	-	497
73 Other machinery and equipment	13	8 000	500	-	71	73	23	401	4 186	-	13 267
74 Aircraft and aircraft parts	-	2 631	545	44	2	118	302	14	2 574	-	6 230
75 Motor vehicles	874	16 843	249	-	123	88	191	69	6 422	-	24 859
76 Trucks, bus bodies and trailers	-	1 550	126	-	88	14	5	91	599	-	2 473
77 Motor vehicle parts and accessories	-	15 509	165	-	79	227	632	592	11 148	-	28 352
78 Railroad rolling stock	-	1 308	9	-	101	17	137	53	977	-	2 602
79 Shipbuilding and repair	-	139	19	-	15	128	110	65	496	-	972
80 Miscellaneous transportation equipment	-	236	39	-	26	41	2	127	528	-	999
81 Small electrical appliances	-	349	4	-	2	-	-	11	134	-	500
82 Major appliances (electric and non-electric)	-	784	-	-	-	-	40	32	404	-	1 260
83 Other electrical and electronic products	1	3 503	74	-	9	45	95	95	2 225	-	6 047
84 Record players, radio and tv receivers	-	55	-	-	-	-	-	-	30	-	85
85 Communication and other electronic equipment	-	1 986	38	-	3	163	-	20	3 453	-	5 663
86 Office, store and business machines	-	342	96	-	2	10	-	4	479	-	933
87 Communications, energy wire and cable	-	851	4	-	8	-	80	12	1 436	-	2 391
88 Batteries	-	252	2	-	1	-	-	39	228	-	522
89 Clay products	-	3 378	6	-	9	78	1	2	390	-	3 864
90 Hydraulic cement	23 617	13 507	26	-	344	77	3 244	71	6 394	10 297	57 577
91 Concrete products	2	2 326	127	-	443	136	37	109	1 030	-	4 210
92 Ready-mix concrete	-	2 280	383	-	2 818	148	169	104	1 021	-	6 923
93 Glass and glass products	-	12 188	31	-	43	14	428	115	2 656	1	15 476
94 Miscellaneous non-metallic mineral products	2 977	20 156	70	-	239	375	1 501	98	6 676	1 185	33 277
95 Refined petroleum and coal products	275	47 007	253	123	20 872	538	41 016	250 711	16 811	47 786	425 392
96 Industrial chemicals n.e.c.	2	89 332	78	-	229	491	2 551	616	49 588	716	143 603
97 Chemicals products n.e.c.	-	52 205	219	-	300	114	103	119	5 939	-	58 999
98 Plastic and synthetic resin	-	23 047	30	-	22	57	367	42	7 598	-	31 163
99 Pharmaceuticals and medicines	2	2 294	32	-	-	58	16	51	1 349	-	3 802
100 Paint and varnish	-	1 445	55	-	11	38	-	9	583	-	2 141



Table B.3.1

## Energy Use by Sector and Fuel Type, 1996 \* (continued)

Sector	Liquified										Total
	Coal	Natural	Motor	Aviation	Diesel	Light fuel	Heavy	petroleum	Electricity	Coke <sup>4</sup>	
		gas	gasoline	fuel <sup>1</sup>	fuel	oil <sup>2</sup>	fuel oil	gases <sup>3</sup>			
terajoules											
101 Soap and cleaning compounds	-	1 389	34	-	22	68	-	10	574	-	2 097
102 Toilet preparations	-	389	20	-	-	2	-	-	274	-	685
103 Other manufacturing industries	5	1 983	134	-	34	100	7	64	1 851	-	4 178
104 Jewellery and precious metals	-	285	12	-	-	4	-	6	186	-	493
105 Sporting goods and toys	-	994	36	-	18	15	-	17	768	-	1 848
106 Signs and displays	6	719	106	-	24	8	1	39	342	-	1 245
107 Floor tile, linoleum and coated fabric	-	472	-	-	1	1	5	18	317	-	814
Sub-total, manufacturing industries (14-107)	43 724	775 539	10 402	167	43 881	14 101	141 739	291 538	683 992	165 106	2 170 189
108 Repair construction	-	221	3 731	-	9 899	397	33	813	799	-	15 893
109 Residential construction	236	621	6 875	-	6 164	192	27	644	966	-	15 725
110 Non-residential building construction	1 176	211	3 740	-	5 985	176	19	445	1 139	-	12 891
111 Road, highway and airport runway construction	1 433	91	11 052	-	16 978	404	58	1 474	252	-	31 742
112 Gas and oil facility construction	2 897	56	6 220	-	6 600	292	40	1 096	337	-	17 538
113 Electric power, dams and irrigation construction	465	72	1 394	-	1 096	73	11	52	70	-	3 233
114 Railway and telecommunication construction	513	25	384	-	369	42	-	43	80	-	1 456
115 Other engineering construction	765	265	419	40	328	37	122	21	412	-	2 409
116 Construction, other activities	-	243	1 672	-	2 049	239	7	87	510	-	4 807
117 Air transport and related services	-	1 765	552	191 051	26	106	80	298	2 157	-	196 035
118 Railway transport and related services	647	1 122	317	-	76 586	773	2 663	419	1 428	4	83 959
119 Water transport and related services	5	2 653	131	-	27 737	513	20 438	480	513	-	52 470
120 Truck transport	-	4 037	12 381	-	262 153	171	184	4 587	2 311	-	285 824
121 Urban transit systems	-	753	18	-	16 081	58	28	957	2 035	-	19 930
122 Interurban and rural transit systems	-	949	2	-	2 810	287	368	108	164	-	4 688
123 Miscellaneous transport services	-	5 452	14 266	-	10 445	202	43	3 507	2 480	-	36 395
124 Pipeline transport	-	241 737	-	178	1 350	65	54	153	6 104	-	249 641
125 Storage and warehousing	-	875	286	-	1 120	770	20	181	871	-	4 123
126 Telecommunication broadcasting	-	336	635	20	48	192	17	245	706	-	2 199
127 Telecommunication carriers	-	6 798	5 839	-	4 271	916	1 294	904	5 365	-	25 387
128 Postal and courier services	-	5 050	6 746	1 527	2 708	396	6	1 745	576	-	18 754
129 Electric power systems	929 635	110 832	914	-	7 388	960	60 699	287	157 363	175	1 268 253
130 Gas distribution systems	-	43 287	524	-	355	10	-	157	868	-	45 201
131 Water systems and other utilities	-	34	803	-	12 288	2	104	380	351	-	13 962
132 Wholesale trade	699	31 097	83 576	-	24 071	3 292	2 366	15 420	24 398	7	184 926
133 Retail trade	-	80 759	50 648	-	18 050	4 310	897	1 608	72 450	-	228 722
134 Finance and real estate	-	151 664	29 573	-	7 512	32 857	-	-	81 870	-	303 476
135 Insurance	-	2 615	1 107	-	-	735	-	-	2 015	-	6 472
137 Other business services	-	3 094	555	-	89	1 019	57	69	3 681	-	8 564
138 Professional business services	-	2 798	4 175	-	691	468	53	527	3 055	-	11 767
139 Advertising services	-	5 368	2 166	-	-	242	-	-	887	-	8 663
140 Educational services	-	1 859	86	-	-	448	-	-	998	-	3 391
141 Other health and social services	-	5 606	7 556	-	-	3 623	90	735	11 017	-	28 627
142 Accommodation and food services	-	25 466	1 769	-	4 035	5 335	316	1 085	24 189	-	62 195
143 Motion picture and video industries	-	13 208	638	-	12	776	-	1 024	1 669	-	17 327
144 Other amusement and recreational services	-	1 946	851	-	101	1 175	91	203	7 476	-	11 843
145 Other personal services	-	1 300	2 516	-	98	1 228	173	659	2 787	-	8 761
146 Laundries and cleaners	-	1 612	547	-	447	976	259	579	1 902	-	6 322
147 Membership organizations (excluding religious) and other services	-	5 669	25 086	-	3 704	1 162	140	580	4 962	-	41 303
152 Travel and entertainment	-	-	76 930	380	124	-	-	1 788	-	-	79 222
Sub-total, business sector (1-152)	987 280	2 137 385	453 820	195 000	759 358	85 163	255 341	364 595	1 244 916	214 864	6 697 722
Non-business sector industries											
Private											
155 Religious organizations	-	12 588	-	-	-	543	54	-	5 445	-	18 630
156 Welfare organizations	-	861	874	-	3	11	-	-	2 222	-	3 971
157 Sports and recreation clubs	-	1 318	70	-	89	53	8	-	1 648	-	3 186





Table B.3.1  
**Energy Use by Sector and Fuel Type, 1996 \*** (continued)

Sector	Coal	Natural gas	Motor gasoline	Aviation fuel <sup>1</sup>	Diesel fuel	Light fuel oil <sup>2</sup>	Liquified petroleum		Electricity	Coke <sup>4</sup>	Total
							fuel oil	gases <sup>3</sup>			
											terajoules
158 Educational institutions	-	3 428	67	-	-	363	-	-	1 877	-	5 735
159 Other organizations	-	3 446	2 950	-	87	145	-	-	9 861	-	16 489
<b>Government</b>											
160 Hospitals	-	17 732	72	-	-	988	-	142	12 786	-	31 720
161 Residential care facilities	-	1 385	184	-	-	93	-	-	994	-	2 656
162 University education	-	8 015	8 572	-	-	152	-	330	7 679	-	24 748
163 Other educational services	-	44 829	3 852	-	-	4 678	-	-	27 125	-	80 484
164 Defence services	596	5 519	1 461	24 504	262	184	3 863	358	3 248	-	39 995
165 Other municipal government	-	25 483	8 375	-	8 086	1 149	-	1 020	38 631	-	82 744
166 Other provincial and territorial government	69	17 629	7 107	596	2 342	1 050	-	2 613	11 769	-	43 175
167 Other federal government	-	9 213	2 141	2 181	3 545	307	1 012	949	10 478	-	29 826
<b>Sub-total, non-business sector (155-167)</b>	<b>665</b>	<b>151 446</b>	<b>35 725</b>	<b>27 281</b>	<b>14 414</b>	<b>9 716</b>	<b>4 937</b>	<b>5 412</b>	<b>133 763</b>	<b>-</b>	<b>383 359</b>
<b>Household sector</b>											
Heating, lighting and appliances	2 251	695 967	-	-	-	157 270	1 595	9 030	486 891	-	1 353 004
Motor fuels and lubricants	-	-	740 920	109	20 979	-	-	20 960	-	-	782 968
<b>Sub-total, household sector</b>	<b>2 251</b>	<b>695 967</b>	<b>740 920</b>	<b>109</b>	<b>20 979</b>	<b>157 270</b>	<b>1 595</b>	<b>29 990</b>	<b>486 891</b>	<b>-</b>	<b>2 135 972</b>
<b>Total, whole economy</b>	<b>990 196</b>	<b>2 984 798</b>	<b>1 230 465</b>	<b>222 390</b>	<b>794 751</b>	<b>252 149</b>	<b>261 873</b>	<b>399 997</b>	<b>1 865 570</b>	<b>214 864</b>	<b>9 217 053</b>

## Notes:

1. Aviation fuel includes both aviation gasoline and aviation turbo fuel.

2. Light fuel oil also includes kerosene.

3. Liquified petroleum gases also include coke oven gas and refinery still gas.

4. Coke includes both coal coke and petroleum coke.

## Source:

Statistics Canada, Environment Accounts and Statistics Division.

Table B.3.2  
**Direct plus Indirect Household Energy Use, 1981-1996**

Year	Direct	Indirect	Total	Use per unit of expenditure gigajoules per thousand 1992 dollars
		petajoules		
1981	1 856	2 746	4 603	14.62
1982	1 853	2 662	4 516	14.71
1983	1 684	2 767	4 451	14.10
1984	1 785	2 811	4 596	13.93
1985	1 809	2 895	4 703	13.56
1986	1 812	2 999	4 811	13.34
1987	1 831	3 166	4 997	13.30
1988	1 951	3 438	5 389	13.75
1989	2 096	3 753	5 849	14.41
1990	1 897	3 601	5 498	13.37
1991	1 850	3 522	5 372	13.24
1992	1 921	3 630	5 551	13.44
1993	1 973	3 625	5 597	13.31
1994	2 024	3 608	5 632	12.99
1995	2 060	3 615	5 675	12.81
1996	2 136	3 728	5 864	12.92

## Notes:

Figures may not add up to total due to rounding.

Direct use includes all energy used in the home and for private transportation.

Indirect use measures the energy required by businesses to produce the goods and services purchased by households. An estimate of the energy used by foreign companies in the production of the imported goods purchased by Canadian households is included.

Total use is the sum of direct plus indirect use.

## Source:

Statistics Canada, Environment Accounts and Statistics Division.



Table B.3.3

**Direct plus Indirect Energy Intensity by Industry, 1996 \***

Industry	Liquified										Total
	Coal	Natural gas	Motor gasoline	Aviation fuel <sup>1</sup>	Diesel fuel	Light fuel oil <sup>2</sup>	Heavy fuel oil	petroleum gases <sup>3</sup>	Electricity	Coke <sup>4</sup>	
gigajoules per thousand 1992 dollars											
1 Agriculture and related services	1.213	4.560	2.559	0.078	5.157	0.131	0.202	0.999	2.157	0.162	17.219
2 Fishing and trapping	0.468	1.805	5.544	0.285	4.784	0.270	0.303	0.876	0.885	0.258	15.476
3 Logging and forestry	0.281	1.033	0.910	0.124	5.330	0.125	0.348	0.525	0.505	0.160	9.342
4 Gold mines	1.903	1.583	0.374	0.114	2.647	0.062	0.367	0.970	4.469	0.156	12.645
5 Other metal mines	1.725	1.941	0.317	0.081	1.965	0.163	0.405	0.786	4.396	0.358	12.138
6 Iron mines	1.942	1.566	0.444	0.148	2.830	0.087	10.266	0.606	11.914	5.351	35.153
7 Asbestos mines	2.671	1.461	0.471	0.089	3.310	0.093	7.326	0.625	6.379	0.171	22.595
8 Other non-metal mines (except coal)	2.007	18.459	0.276	0.059	0.835	1.135	0.194	0.405	5.553	0.090	29.013
9 Salt mines	1.177	7.786	0.429	0.198	0.787	0.046	1.334	0.212	2.475	0.068	14.513
10 Coal mines	4.001	3.728	0.388	0.060	5.183	0.059	0.186	0.666	2.157	0.160	16.587
11 Crude petroleum and natural gas	1.086	21.421	0.535	0.073	0.316	0.037	0.256	0.697	1.991	1.787	28.200
12 Quarries and sand pits	1.117	1.893	0.609	0.055	4.070	0.360	0.456	0.732	1.694	0.183	11.169
13 Services incidental to mineral extraction	0.907	1.631	1.129	0.359	1.408	0.147	0.720	0.361	1.273	0.250	8.185
14 Meat and meat products	1.228	4.351	1.854	0.091	3.756	0.116	0.249	0.688	2.235	0.099	14.667
15 Poultry products	1.161	3.532	1.514	0.076	3.076	0.135	0.181	0.552	2.180	0.084	12.490
16 Fish products	0.628	1.230	1.878	0.174	1.856	0.319	0.401	0.450	1.709	0.122	8.766
17 Fruits and vegetables	0.605	3.131	0.446	0.096	0.784	0.059	1.125	0.268	1.347	0.121	7.981
18 Dairy products	1.135	4.150	1.675	0.110	3.853	0.138	0.318	0.663	2.136	0.105	14.283
19 Miscellaneous food products	0.636	3.486	0.481	0.087	0.944	0.090	0.209	0.250	1.408	0.065	7.656
20 Feed	0.890	4.312	0.893	0.095	2.144	0.163	0.226	0.477	1.909	0.107	11.217
21 Vegetable oil mills (excluding corn oil)	0.858	6.035	1.234	0.066	2.555	0.111	0.153	0.589	1.803	0.121	13.524
22 Biscuits	0.535	2.590	0.370	0.133	0.491	0.050	0.198	0.163	1.106	0.049	5.684
23 Bread and other bakery products	0.674	2.790	0.400	0.065	0.835	0.145	0.163	0.203	1.412	0.056	6.742
24 Cane and beet sugar	0.268	8.700	0.227	0.061	0.565	0.146	2.042	0.165	1.092	0.520	13.786
25 Soft drinks	0.580	2.513	0.515	0.075	0.693	0.088	0.211	0.273	1.351	0.285	6.583
26 Distillery products	0.430	6.099	0.333	0.146	0.309	0.122	0.262	0.126	1.025	0.042	8.893
27 Brewery products	0.457	2.590	0.280	0.104	0.385	0.089	0.238	0.127	1.101	0.086	5.456
28 Wine	0.452	2.362	0.328	0.076	0.441	0.040	0.175	0.129	1.025	0.045	5.074
29 Tobacco products	0.464	1.755	0.617	0.105	0.997	0.053	0.148	0.272	1.032	0.058	5.500
30 Rubber products	0.668	2.539	0.234	0.079	0.358	0.168	0.141	0.196	1.537	0.100	6.020
31 Plastic products	1.002	2.893	0.232	0.063	0.319	0.053	0.164	0.176	2.373	0.061	7.335
32 Leather tanneries	0.606	3.540	0.510	0.070	0.849	0.099	0.116	0.320	1.233	0.060	7.403
33 Footwear	0.508	1.263	0.221	0.064	0.267	0.073	0.094	0.101	1.196	0.029	3.816
34 Miscellaneous leather and allied products	0.438	1.470	0.315	0.091	0.247	0.033	0.107	0.150	1.039	0.087	3.977
35 Man-made fibre yarn and woven cloth	0.990	4.758	0.165	0.050	0.218	0.068	0.292	0.137	2.312	0.036	9.024
36 Wool yarn and woven cloth	0.860	1.714	0.209	0.061	0.180	0.310	0.380	0.127	2.085	0.035	5.961
37 Broad knitted fabrics	0.687	2.582	0.210	0.047	0.228	0.400	0.118	0.177	1.632	0.031	6.111
38 Miscellaneous textile products	0.680	2.983	0.260	0.067	0.235	0.078	0.132	0.143	1.459	0.036	6.072
39 Carpets, mats and rugs	0.637	3.686	0.217	0.049	0.249	0.186	0.355	0.224	1.401	0.038	7.042
40 Clothing excluding hosiery	0.382	1.361	0.193	0.050	0.154	0.062	0.090	0.089	0.885	0.020	3.286
41 Hosiery	0.706	2.285	0.158	0.039	0.204	0.048	0.114	0.079	1.843	0.025	5.502
42 Sawmills, planing mill and shingle mill products	0.884	2.503	0.666	0.105	3.714	0.134	0.421	0.520	1.978	0.119	11.044
43 Veneer and plywood	0.994	6.640	0.538	0.093	2.412	0.098	0.263	0.485	2.382	0.104	14.009
44 Sash, door and other millwork	0.690	2.173	0.525	0.092	1.001	0.085	0.175	0.273	1.495	0.115	6.623
45 Wooden boxes and coffins	0.794	2.060	0.715	0.100	1.489	0.117	0.219	0.412	1.716	0.112	7.734
46 Other wood industries	1.344	3.717	0.450	0.078	1.520	0.497	0.324	0.385	2.825	0.095	11.233
47 Household furniture	0.651	2.298	0.304	0.063	0.519	0.088	0.173	0.203	1.110	0.100	5.508
48 Office furniture	0.518	1.943	0.295	0.072	0.404	0.047	0.147	0.214	1.032	0.294	4.965
49 Other furniture and fixtures	0.606	2.374	0.322	0.072	0.502	0.051	0.180	0.291	1.320	0.447	6.166
50 Pulp and paper	3.586	11.055	0.428	0.108	2.000	0.177	4.063	0.532	12.154	0.123	34.226
51 Asphalt roofing	0.986	9.195	0.276	0.082	1.038	0.061	0.640	1.739	2.380	0.456	16.853
52 Paper boxes and bags	1.130	4.619	0.300	0.073	0.775	0.127	1.180	0.279	3.994	0.063	12.540
53 Other converted paper products	1.146	4.266	0.277	0.076	0.682	0.069	0.930	0.246	3.610	0.066	11.368
54 Printing and publishing	0.951	2.751	0.312	0.100	0.563	0.056	0.684	0.188	2.548	0.043	8.194
55 Platemaking, typesetting and bindery	0.554	1.523	0.314	0.091	0.279	0.034	0.184	0.126	1.300	0.053	4.459
56 Primary steel	2.356	10.048	0.274	0.066	0.984	0.079	1.705	3.719	6.078	12.399	37.706
57 Steel pipes and tubes	1.328	5.228	0.241	0.069	0.812	0.049	0.719	1.500	3.225	4.766	17.937



Table B.3.3

**Direct plus Indirect Energy Intensity by Industry, 1996 \* (continued)**

Industry	gigajoules per thousand 1992 dollars										Total
	Coal	Natural gas	Motor gasoline	Aviation fuel <sup>1</sup>	Diesel fuel	Light fuel oil <sup>2</sup>	Heavy petroleum fuel oil	Liquified gases <sup>3</sup>	Electricity	Coke <sup>4</sup>	
58 Iron foundries	2.578	4.922	0.235	0.049	0.500	0.071	0.246	0.467	4.454	4.579	18.099
59 Non-ferrous metal smelting and refining	4.031	4.232	0.226	0.065	1.113	0.260	1.112	0.430	21.664	0.611	33.745
60 Aluminum rolling, casting and extruding	1.402	5.220	0.210	0.055	0.695	0.214	0.295	0.286	5.475	0.194	14.048
61 Copper and alloy rolling, casting and extruding	1.645	2.771	0.167	0.051	0.645	0.115	0.364	0.234	6.942	0.194	13.127
62 Other rolling, casting and extruding non-ferrous metal products	1.196	4.542	0.285	0.059	0.821	0.205	0.290	0.191	3.957	0.313	11.858
63 Power boilers and structural metals	0.785	3.377	0.325	0.088	0.627	0.072	0.354	0.772	1.865	2.053	10.318
64 Ornamental and architectural metal products	0.766	3.221	0.329	0.077	0.523	0.061	0.286	0.555	1.992	1.317	9.125
65 Stamped, pressed and coated metals	0.956	4.673	0.256	0.057	0.574	0.054	0.321	0.623	2.388	1.573	11.474
66 Wire and wire products	1.062	4.849	0.285	0.075	0.563	0.041	0.358	0.700	2.706	1.846	12.485
67 Hardware, tools and cutlery	0.652	1.906	0.266	0.062	0.337	0.042	0.177	0.338	1.407	0.816	6.003
68 Heating equipment	0.523	2.015	0.241	0.067	0.302	0.052	0.176	0.354	1.119	0.859	5.709
69 Machine shops	0.786	2.259	0.492	0.063	0.368	0.062	0.197	0.414	1.644	0.934	7.220
70 Other metal fabricating	0.990	4.318	0.293	0.074	0.483	0.060	0.337	0.693	2.472	1.818	11.539
71 Agricultural implements	0.529	2.247	0.331	0.082	0.447	0.054	0.161	0.352	1.145	0.761	6.109
72 Commercial refrigeration and air conditioning equipment	0.475	1.746	0.193	0.060	0.291	0.041	0.145	0.304	1.051	0.646	4.952
73 Other machinery and equipment	0.530	1.899	0.256	0.071	0.314	0.034	0.168	0.352	1.133	0.844	5.600
74 Aircraft and aircraft parts	0.363	1.009	0.275	0.425	0.200	0.041	0.121	0.147	0.813	0.240	3.634
75 Motor vehicles	0.278	1.050	0.119	0.034	0.278	0.022	0.075	0.129	0.534	0.191	2.709
76 Trucks, bus bodies and trailers	0.530	2.401	0.363	0.078	0.549	0.047	0.200	0.405	1.264	0.752	6.589
77 Motor vehicle parts and accessories	0.684	2.154	0.175	0.044	0.338	0.040	0.220	0.358	1.460	0.905	6.378
78 Railroad rolling stock	0.594	1.945	0.178	0.054	0.369	0.035	0.252	0.398	1.409	1.056	6.292
79 Shipbuilding and repair	0.565	1.118	0.244	0.099	0.211	0.224	0.308	0.355	1.380	0.604	5.106
80 Miscellaneous transportation equipment	0.343	0.985	0.376	0.074	0.330	0.058	0.099	0.243	0.775	0.128	3.410
81 Small electrical appliances	0.512	2.217	0.368	0.125	0.345	0.042	0.180	0.326	1.161	0.650	5.926
82 Major appliances (electric and non-electric)	0.500	1.992	0.310	0.127	0.291	0.030	0.208	0.346	1.108	0.718	5.629
83 Other electrical and electronic products	0.587	2.045	0.271	0.085	0.322	0.044	0.176	0.269	1.342	0.462	5.603
84 Record players, radio and tv receivers	0.226	0.631	0.212	0.070	0.200	0.030	0.051	0.073	0.397	0.025	1.915
85 Communication and other electronic equipment	0.235	0.505	0.182	0.077	0.123	0.032	0.042	0.066	0.507	0.052	1.820
86 Office, store and business machines	0.098	0.201	0.116	0.049	0.106	0.012	0.021	0.039	0.157	0.033	0.832
87 Communications, energy wire and cable	0.967	2.487	0.251	0.083	0.400	0.052	0.250	0.231	2.820	0.258	7.800
88 Batteries	0.978	2.017	0.251	0.082	0.504	0.049	0.185	0.287	2.806	0.114	7.273
89 Clay products	1.597	21.642	0.263	0.070	0.405	0.488	0.171	0.158	2.930	0.093	27.817
90 Hydraulic cement	8.549	16.393	0.400	0.106	1.014	0.140	3.751	0.344	7.840	11.037	69.573
91 Concrete products	3.511	5.323	0.483	0.109	1.346	0.232	0.548	0.391	2.478	1.286	15.707
92 Ready-mix concrete	7.986	6.617	0.644	0.112	3.165	0.190	1.236	0.510	3.148	2.987	26.595
93 Glass and glass products	1.314	10.868	0.214	0.061	0.459	0.042	0.491	0.216	2.753	0.066	16.484
94 Miscellaneous non-metallic mineral products	3.399	12.655	0.334	0.095	0.937	0.258	1.086	0.305	4.622	0.733	24.424
95 Refined petroleum and coal products	0.946	13.702	0.333	0.066	1.495	0.062	2.500	14.648	2.059	3.522	39.332
96 Industrial chemicals n.e.c.	2.357	17.969	0.290	0.079	0.603	0.115	0.765	1.118	8.898	0.468	32.663
97 Chemicals products n.e.c.	0.875	13.694	0.296	0.082	0.712	0.064	0.192	0.371	2.054	0.175	18.513
98 Plastic and synthetic resin	1.136	11.114	0.259	0.077	0.579	0.061	0.375	0.527	4.148	0.201	18.476
99 Pharmaceuticals and medicines	0.340	1.151	0.317	0.131	0.288	0.041	0.078	0.110	0.664	0.029	3.149
100 Paint and varnish	0.639	3.065	0.306	0.095	0.441	0.059	0.150	0.305	1.378	0.110	6.549
101 Soap and cleaning compounds	0.594	2.557	0.354	0.117	0.484	0.083	0.161	0.168	1.299	0.054	5.870
102 Toilet preparations	0.395	1.569	0.263	0.084	0.335	0.036	0.134	0.149	0.878	0.045	3.888
103 Other manufacturing industries	0.452	1.278	0.245	0.071	0.234	0.050	0.117	0.145	0.996	0.145	3.735
104 Jewellery and precious metals	0.291	0.756	0.163	0.048	0.403	0.027	0.074	0.085	0.907	0.035	2.787
105 Sporting goods and toys	0.509	1.851	0.280	0.094	0.310	0.042	0.150	0.195	1.247	0.303	4.979
106 Signs and displays	0.540	2.239	0.414	0.085	0.318	0.048	0.126	0.284	1.152	0.299	5.504
107 Floor tile, linoleum and coated fabric	0.703	3.241	0.259	0.087	0.382	0.045	0.156	0.199	1.714	0.054	6.840
108 Repair construction	0.449	1.232	0.520	0.052	1.295	0.073	0.145	0.416	0.634	0.243	5.059
109 Residential construction	0.531	1.479	0.567	0.066	0.867	0.060	0.151	0.280	0.796	0.247	5.045
110 Non-residential building construction	0.691	1.245	0.477	0.084	0.818	0.056	0.152	0.270	0.702	0.350	4.844





Table B.3.3

## Direct plus Indirect Energy Intensity by Industry, 1996 \* (continued)

Industry	Liquified										Total
	Coal	Natural	Motor	Aviation	Diesel	Light fuel	Heavy petroleum	Electricity	Coke <sup>4</sup>		
		gas	gasoline	fuel <sup>1</sup>	fuel	oil <sup>2</sup>	fuel oil			gases <sup>3</sup>	
gigajoules per thousand 1992 dollars											
111 Road, highway and airport runway construction	1.274	1.964	2.768	0.092	4.736	0.157	0.365	1.531	0.822	0.588	14.295
112 Gas and oil facility construction	0.728	1.246	0.957	0.160	1.162	0.088	0.281	0.449	0.792	0.454	6.317
113 Electric power, dams and irrigation construction	0.588	0.839	0.634	0.059	0.781	0.052	0.126	0.212	0.469	0.285	4.044
114 Railway and telecommunication construction	0.482	0.819	0.387	0.059	0.551	0.052	0.096	0.209	0.581	0.233	3.468
115 Other engineering construction	0.764	1.209	0.422	0.123	0.621	0.067	0.226	0.232	0.743	0.364	4.777
116 Construction, other activities	0.588	1.148	2.361	0.043	2.910	0.340	0.136	0.564	1.006	0.119	9.215
117 Air transport and related services	0.532	1.803	0.505	21.550	0.322	0.074	0.234	1.022	0.801	0.248	27.091
118 Railway transport and related services	0.512	1.650	0.362	0.103	11.772	0.161	0.612	1.040	0.698	0.332	17.242
119 Water transport and related services	0.293	1.971	0.311	0.089	9.063	0.203	6.570	0.895	0.550	0.204	20.149
120 Truck transport	0.274	1.662	1.035	0.079	16.118	0.045	0.236	1.374	0.510	0.270	21.603
121 Urban transit systems	1.244	2.095	0.330	0.070	12.555	0.085	0.279	1.604	2.163	0.243	20.667
122 Interurban and rural transit systems	0.590	4.617	0.604	0.070	9.911	0.961	1.384	1.275	1.036	0.219	20.667
123 Miscellaneous transport services	0.548	2.297	3.314	0.070	4.072	0.087	0.200	1.352	0.950	0.161	13.051
124 Pipeline transport	0.967	55.451	0.169	0.120	0.444	0.033	0.096	0.117	1.670	0.037	59.103
125 Storage and warehousing	0.588	1.340	0.404	0.052	1.359	0.591	0.171	0.364	0.992	0.067	5.929
126 Telecommunication broadcasting	0.288	0.891	0.385	0.209	0.160	0.097	0.058	0.181	0.481	0.031	2.779
127 Telecommunication carriers	0.277	0.720	0.422	0.049	0.329	0.066	0.122	0.141	0.511	0.030	2.665
128 Postal and courier services	0.245	1.531	1.353	0.913	1.555	0.100	0.112	0.586	0.437	0.083	6.915
129 Electric power systems	5.690	4.735	0.122	0.030	0.502	0.051	2.361	0.141	6.238	0.061	49.932
130 Gas distribution systems	0.236	13.892	0.239	0.021	0.182	0.019	0.032	0.104	0.423	0.041	15.189
131 Water systems and other utilities	0.299	1.010	0.703	0.079	6.085	0.045	0.181	0.720	0.579	0.147	9.846
132 Wholesale trade	0.466	1.323	1.832	0.200	0.748	0.108	0.155	0.525	0.805	0.076	6.238
133 Retail trade	0.900	2.076	1.037	0.105	0.487	0.123	0.125	0.192	1.560	0.046	6.650
134 Finance and real estate	0.667	2.246	0.678	0.182	0.268	0.366	0.092	0.165	1.193	0.049	5.906
135 Insurance	0.333	1.087	0.513	0.183	0.166	0.174	0.061	0.133	0.636	0.034	3.321
136 Owner occupied dwellings	0.033	0.127	0.048	0.010	0.059	0.017	0.009	0.022	0.069	0.011	0.404
137 Other business services	0.236	0.559	0.299	0.106	0.139	0.074	0.051	0.087	0.411	0.027	1.989
138 Professional business services	0.246	0.603	0.505	0.138	0.185	0.062	0.054	0.125	0.420	0.029	2.365
139 Advertising services	0.430	2.472	1.044	0.172	0.227	0.133	0.095	0.173	0.742	0.051	5.538
140 Educational services	1.209	3.746	0.730	0.263	0.325	0.679	0.149	0.243	2.004	0.073	9.422
141 Other health and social services	0.445	0.668	0.526	0.060	0.112	0.199	0.062	0.135	0.759	0.026	2.992
142 Accommodation and food services	0.748	1.905	0.438	0.066	0.720	0.214	0.136	0.204	1.340	0.043	5.813
143 Motion picture and video industries	0.542	4.919	0.515	0.380	0.317	0.283	0.093	0.474	0.939	0.053	8.515
144 Other amusement and recreational services	0.874	1.110	0.545	0.148	0.289	0.199	0.125	0.168	1.522	0.045	5.025
145 Other personal services	0.410	0.680	0.574	0.057	0.167	0.225	0.088	0.225	0.709	0.036	3.169
146 Laundries and cleaners	0.950	2.069	0.567	0.065	0.629	0.624	0.294	0.652	1.665	0.087	7.602
147 Membership organizations (excludes religious) and other services	0.385	1.033	1.787	0.114	0.419	0.117	0.091	0.251	0.656	0.062	4.914
148 Operating supplies	0.299	1.093	0.406	0.060	0.413	0.038	0.104	0.193	0.656	0.145	3.405
149 Office supplies	0.703	2.220	0.418	0.091	0.685	0.052	0.494	0.211	1.841	0.052	6.766
150 Cafeteria supplies	0.801	2.953	1.113	0.104	2.247	0.097	0.260	0.442	1.513	0.093	9.623
151 Laboratory supplies	0.228	0.802	0.234	0.039	0.355	0.022	0.065	0.107	0.566	0.038	2.456
152 Travel and entertainment	0.537	1.736	5.862	3.925	0.641	0.108	0.197	0.903	0.860	0.181	14.950
153 Advertising and promotion	0.483	1.793	0.525	0.161	0.355	0.082	0.231	0.173	1.104	0.048	4.956
154 Transportation margins	0.344	1.612	0.911	0.561	12.641	0.086	0.588	1.158	0.572	0.256	18.730
155 Religious organizations	1.188	4.572	0.235	0.054	0.163	0.189	0.127	0.093	2.033	0.036	8.689
156 Welfare organizations	0.922	1.065	0.737	0.116	0.165	0.046	0.102	0.110	1.555	0.031	4.849
157 Sports and recreation clubs	1.435	2.572	0.561	0.166	0.535	0.109	0.166	0.161	2.474	0.048	8.226
158 Educational institutions	0.832	2.661	0.281	0.031	0.269	0.239	0.088	0.131	1.454	0.032	6.019
159 Other organizations	1.309	1.435	0.833	0.116	0.313	0.084	0.136	0.146	2.226	0.039	6.636
160 Hospitals	0.424	1.105	0.128	0.029	0.138	0.057	0.053	0.059	0.761	0.018	2.772
161 Residential care facilities	0.227	0.635	0.190	0.040	0.181	0.038	0.039	0.059	0.395	0.016	1.820
162 University education	0.551	1.234	1.047	0.105	0.135	0.033	0.073	0.157	0.990	0.033	4.357



Table B.3.3

**Direct plus Indirect Energy Intensity by Industry, 1996 \*** (continued)

Industry	gigajoules per thousand 1992 dollars										Total
	Coal	Natural gas	Motor gasoline	Aviation fuel <sup>1</sup>	Diesel fuel	Light fuel oil <sup>2</sup>	Heavy petroleum fuel oil	Liquified petroleum gases <sup>3</sup>	Electricity	Coke <sup>4</sup>	
163 Other educational services	0.540	1.610	0.280	0.026	0.177	0.136	0.062	0.095	0.942	0.023	3.891
164 Defence services	0.416	1.213	0.484	2.891	0.262	0.044	0.466	0.269	0.641	0.091	6.775
165 Other municipal government	1.102	1.588	0.531	0.063	0.609	0.072	0.114	0.173	1.854	0.040	6.146
166 Other provincial and territorial government	0.432	1.064	0.525	0.124	0.307	0.109	0.073	0.191	0.740	0.040	3.604
167 Other federal government	0.439	0.947	0.447	0.267	0.328	0.056	0.110	0.157	0.761	0.038	3.551

**Notes:**

Intensity of production is measured as direct plus indirect energy use per thousand dollars of production (in constant dollars). Direct energy use is that associated with the industry's own production; indirect use is that associated with the production of the goods and services that are used by the industry.

1. Aviation fuel includes both aviation gasoline and aviation turbo fuel.

2. Light fuel oil also includes kerosene.

3. Liquified petroleum gases also include coke oven gas and refinery still gas.

4. Coke includes both coal coke and petroleum coke.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.



Table B.3.4  
Water Intake by Sector, 1991 \*



Table B.3.4

**Water Intake by Sector, 1991 \* (continued)**

Sector	Intake					Total	Recirculation	Gross water use <sup>2</sup>
	Municipal source	Self-supplied			Other			
		Surface-fresh	Surface-salt	Ground <sup>1</sup>				
	thousand cubic metres							
53 Other converted paper products	16 945	1 664	-	201	157	18 968	11 993	30 961
54 Printing and publishing	11 637	-	-	-	-	11 637	1 164	12 800
55 Platemaking, typesetting and bindery	1 717	-	-	-	-	1 717	172	1 888
56 Primary steel	50 741	992 609	-	889	17 071	1 061 310	1 324 061	2 385 371
57 Steel pipes and tubes	3 363	1 334	-	-	-	4 697	20 045	24 742
58 Iron foundries	10 091	81 368	-	13	-	91 473	3 323	94 796
59 Non-ferrous metal smelting and refining	18 465	412 172	4 206	651	9 466	444 960	323 353	768 313
60 Aluminum rolling, casting and extruding	3 713	47	-	20	-	3 780	2 240	6 020
61 Copper and alloy rolling, casting and extruding	754	323	-	11	-	1 088	15 461	16 549
62 Other rolling, casting and extruding non-ferrous metal products	2 355	-	-	-	-	2 355	236	2 591
63 Power boilers and structural metals	3 286	100	-	92	-	3 478	154	3 633
64 Ornamental and architectural metal products	5 966	-	-	-	-	5 966	597	6 562
65 Stamped, pressed and coated metals	8 970	6	-	255	-	9 230	25 719	34 948
66 Wire and wire products	8 192	7 092	-	518	-	15 802	3 826	19 628
67 Hardware, tools and cutlery	10 956	-	-	-	-	10 956	1 096	12 052
68 Heating equipment	1 574	-	-	-	-	1 574	157	1 731
69 Machine shops	6 928	-	-	-	-	6 928	693	7 620
70 Other metal fabricating	5 031	-	-	-	-	5 031	503	5 534
71 Agricultural implements	2 296	-	-	-	-	2 296	230	2 526
72 Commercial refrigeration and air conditioning equipment	1 030	-	-	-	-	1 030	103	1 133
73 Other machinery and equipment	19 796	-	-	-	-	19 796	1 980	21 776
74 Aircraft and aircraft parts	26 913	-	-	-	-	26 913	6 485	33 398
75 Motor vehicles	22 271	-	-	-	-	22 271	2 227	24 498
76 Trucks, bus bodies and trailers	3 678	-	-	-	-	3 678	368	4 046
77 Motor vehicle parts and accessories	48 271	3 564	-	428	-	52 263	29 434	81 696
78 Railroad rolling stock	831	-	-	-	62	893	260	1 153
79 Shipbuilding and repair	4 408	-	47	-	-	4 455	-	4 455
80 Miscellaneous transportation equipment	1 424	-	-	-	-	1 424	142	1 567
81 Small electrical appliances	710	-	-	-	-	710	71	781
82 Major appliances (electric and non-electric)	1 964	-	-	-	-	1 964	196	2 160
83 Other electrical and electronic products	456	-	-	-	-	456	46	501
84 Record players, radio and tv receivers	11 223	-	-	-	-	11 223	1 122	12 345
85 Communication and other electronic equipment	3 136	-	-	-	-	3 136	314	3 450
86 Office, store and business machines	2 365	-	-	-	-	2 365	236	2 601
87 Communications, energy wire and cable	928	-	-	-	-	928	93	1 021
88 Batteries	7 426	-	-	-	-	7 426	743	8 168
89 Clay products	676	-	-	-	-	676	68	744
90 Hydraulic cement	4 012	22 581	-	5 564	66	32 224	4 971	37 194
91 Concrete products	1 558	11	-	93	-	1 661	101	1 763
92 Ready-mix concrete	15 772	3 974	-	347	6 876	26 969	3 400	30 369
93 Glass and glass products	10 025	1 527	-	5	14	11 571	12 231	23 801
94 Miscellaneous non-metallic mineral products	9 606	15 326	277	26 485	10 125	61 818	134 975	196 793
95 Refined petroleum and coal products	20 994	323 769	93 095	1 559	6 447	445 864	1 011 618	1 457 482
96 Industrial chemicals n.e.c.	34 812	1 154 086	609	1 958	4 437	1 195 902	831 819	2 027 721
97 Chemicals products n.e.c.	12 901	38 283	-	8	17 247	68 439	8 689	77 127
98 Plastic and synthetic resin	8 734	30 404	-	-	2 708	41 847	133 156	175 002
99 Pharmaceuticals and medicines	4 907	636	-	-	-	5 543	1 893	7 436
100 Paint and varnish	3 049	-	-	21	-	3 070	2 374	5 445
101 Soap and cleaning compounds	6 347	-	-	135	3 042	9 524	755	10 278
102 Toilet preparations	1 435	-	-	-	-	1 435	144	1 579
103 Other manufacturing industries	4 513	-	-	-	-	4 513	451	4 964
104 Jewellery and precious metals	591	-	-	-	-	591	59	650
105 Sporting goods and toys	864	-	-	-	-	864	86	950
106 Signs and displays	1 004	-	-	-	-	1 004	100	1 105
107 Floor tile, linoleum and coated fabric	346	-	-	-	-	346	35	381



Table B.3.4

**Water Intake by Sector, 1991 \* (continued)**

Sector	Intake						Total Recirculation	Gross water use <sup>2</sup>
	Municipal source	Self-supplied						
		Surface-fresh	Surface-salt	Ground <sup>1</sup>	Other			
thousand cubic metres								
Sub-total, manufacturing industries (14-107)	969 823	6 047 770	173 497	133 492	122 970	7 447 553	6 734 106	14 181 659
108 Repair construction	2 549	2 549	-	-	-	5 097	-	5 097
109 Residential construction	6 764	6 764	-	-	-	13 528	-	13 528
110 Non-residential building construction	-	17 665	-	-	-	17 665	-	17 665
111 Road, highway and airport runway construction	-	941	-	-	-	941	-	941
112 Gas and oil facility construction	-	1 083	-	-	-	1 083	-	1 083
113 Electric power, dams and irrigation construction	-	846	-	-	-	846	-	846
114 Railway and telecommunication construction	-	260	-	-	-	260	-	260
115 Other engineering construction	-	959	-	-	-	959	-	959
116 Construction, other activities	105	105	-	-	-	211	-	211
117 Air transport and related services	4 852	-	-	-	-	4 852	-	4 852
118 Railway transport and related services	2 334	-	-	-	-	2 334	-	2 334
119 Water transport and related services	999	-	-	-	-	999	-	999
120 Truck transport	6 275	-	-	-	-	6 275	-	6 275
121 Urban transit systems	1 505	-	-	-	-	1 505	-	1 505
122 Interurban and rural transit systems	254	-	-	-	-	254	-	254
123 Miscellaneous transport services	3 302	-	-	-	-	3 302	-	3 302
124 Pipeline transport	322	-	-	-	-	322	-	322
125 Storage and warehousing	5 493	-	-	-	-	5 493	-	5 493
126 Telecommunication broadcasting	1 361	-	-	-	-	1 361	-	1 361
127 Telecommunication carriers	5 034	-	-	-	-	5 034	-	5 034
128 Postal and courier services	4 974	-	-	-	-	4 974	-	4 974
129 Electric power systems	158 100	25 972 700	2 148 422	8 843	-	28 288 065	3 374 320	31 662 385
130 Gas distribution systems	621	-	-	-	-	621	-	621
131 Water systems and other utilities	579	-	-	-	-	579	-	579
132 Wholesale trade	38 812	-	-	-	-	38 812	-	38 812
133 Retail trade	157 941	-	-	-	-	157 941	-	157 941
134 Finance and real estate	29 586	-	-	-	-	29 586	-	29 586
135 Insurance	3 899	-	-	-	-	3 899	-	3 899
137 Other business services	16 258	-	-	-	-	16 258	-	16 258
138 Professional business services	15 197	-	-	-	-	15 197	-	15 197
139 Advertising services	2 175	-	-	-	-	2 175	-	2 175
140 Educational services	3 097	-	-	-	-	3 097	-	3 097
141 Other health and social services	86 061	-	-	-	-	86 061	-	86 061
142 Accommodation and food services	189 511	-	-	-	-	189 511	-	189 511
143 Motion picture and video industries	4 599	-	-	-	-	4 599	-	4 599
144 Other amusement and recreational services	78 299	-	-	-	-	78 299	-	78 299
145 Other personal services	50 393	-	-	-	-	50 393	-	50 393
146 Laundries and cleaners	32 864	-	-	-	-	32 864	-	32 864
147 Membership organizations (excluding religious) and other services	30 461	-	-	-	-	30 461	-	30 461
Sub-total, business sector (1-147)	1 934 900	35 980 860	2 327 647	827 440	145 512	41 216 359	12 064 754	53 281 114
Non-business sector industries								
Private								
155 Religious organizations	2 962	-	-	-	-	2 962	-	2 962
156 Welfare organizations	4 782	-	-	-	-	4 782	-	4 782
157 Sports and recreation clubs	9 591	-	-	-	-	9 591	-	9 591
158 Educational institutions	3 454	-	-	-	-	3 454	-	3 454
159 Other organizations	10 090	-	-	-	-	10 090	-	10 090
Government								
160 Hospitals	69 990	-	-	-	-	69 990	-	69 990
161 Residential care facilities	19 137	-	-	-	-	19 137	-	19 137
162 University education	46 987	-	-	-	-	46 987	-	46 987
163 Other educational services	108 438	-	-	-	-	108 438	-	108 438
164 Defence services	12 120	-	-	-	-	12 120	-	12 120
165 Other municipal government <sup>3</sup>	203 138	-	-	-	-	203 138	-	203 138
166 Other provincial and territorial government	31 939	-	-	-	-	31 939	-	31 939



Table B.3.4

**Water Intake by Sector, 1991 \* (continued)**

Sector	Intake					Total	Recirculation	Gross water use <sup>2</sup>
	Municipal source	Self-supplied						
		Surface-fresh	Surface-salt	Ground <sup>1</sup>	Other			
167 Other federal government	16 873	-	-	-	-	16 873	-	16 873
Sub-total, non-business sector (155-167)	539 501	-	-	-	-	539 501	-	539 501
Household Sector								
Residential use	2 627 301	-	-	635 397	-	3 262 698	-	3 262 698
Total, whole economy	5 101 702	35 980 860	2 327 647	1 462 837	145 512	45 018 558	12 064 754	57 083 312

**Notes:**

Figures may not add up to totals due to rounding.

1. Includes water pumped from mine sites (mine water).

2. Gross water use is the sum of water intake plus recirculation.

3. Other municipal government includes water unaccounted for or lost as leakage in municipal water systems.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.

Table B.3.5

**Water Discharge and Consumption by Sector, 1991 \***

Sector	Total intake	Discharge						Total Consumption <sup>1</sup>	
		Municipal sewers	Direct			Other	Transfer		
			Surface-fresh	Surface-salt	Ground				
Business sector industries									
1 Agriculture and related services	3 991 000	-	-	-	902 000	-	-	902 000	3 089 000
2 Fishing and trapping	-	-	-	-	-	-	-	-	-
3 Logging and forestry	4 200	-	-	-	4 200	-	-	4 200	-
4 Gold mines	49 782	1 781	31 322	6	86	16 587	-	49 782	-
5 Other metal mines	269 971	443	141 838	25 991	23 800	77 887	12	269 971	-
6 Iron mines	104 416	-	87 249	591	16 330	-	245	104 416	-
7 Asbestos mines	7 336	-	6 764	-	573	-	-	7 336	-
8 Other non-metal mines (except coal)	15 011	-	441	1 499	13 071	-	-	15 011	-
9 Salt mines	25 564	51	16 742	6 207	47	1 446	78	24 571	993
10 Coal mines	17 414	3 893	4 632	3 307	863	4 668	50	17 414	-
11 Crude petroleum and natural gas	108 400	-	46 400	-	6 000	-	-	52 400	56 000
12 Quarries and sand pits	65 000	-	52 000	-	-	-	-	52 000	13 000
13 Services incidental to mineral extraction	5 000	-	-	-	2 500	-	-	2 500	2 500
Sub-total, primary resource industries (1-13)	4 663 094	6 168	387 389	37 601	969 469	100 589	386	1 501 601	3 161 493
14 Meat and meat products	30 005	19 713	314	2 567	38	-	1 182	23 815	6 190
15 Poultry products	30 626	24 027	5 061	-	360	-	219	29 667	960
16 Fish products	100 820	12 376	5 579	78 693	1 687	-	112	98 446	2 373
17 Fruits and vegetables	37 491	15 139	8 639	1 756	1 058	-	4 473	31 065	6 426
18 Dairy products	26 032	17 886	4 244	-	859	-	17	23 007	3 025
19 Miscellaneous food products	89 959	60 720	19 967	-	1 042	-	10	81 740	8 219
20 Feed	1 734	1 560	-	-	-	-	-	1 560	173
21 Vegetable oil mills (excluding corn oil)	39 147	895	37 066	-	2	-	-	37 964	1 183
22 Biscuits	1 499	1 226	-	-	-	-	-	1 226	272
23 Bread and other bakery products	4 215	3 256	-	-	10	-	-	3 266	949
24 Cane and beet sugar	9 162	723	8 082	478	-	-	-	9 282	-121
25 Soft drinks	7 804	3 764	-	-	-	-	64	3 828	3 976
26 Distillery products	23 603	9 313	10 998	-	550	-	-	20 861	2 742
27 Brewery products	35 463	31 046	108	-	108	-	-	31 261	4 202
28 Wine	1 411	1 144	-	-	38	-	-	1 182	229
29 Tobacco products	1 823	1 376	-	-	-	-	-	1 376	447
30 Rubber products	22 426	5 733	14 438	-	116	-	26	20 313	2 113
31 Plastic products	57 274	50 870	2 397	-	338	-	1	53 606	3 668
32 Leather tanneries	1 010	960	-	-	-	-	-	960	51
33 Footwear	935	888	-	-	-	-	-	888	47
34 Miscellaneous leather and allied products	359	323	-	-	-	-	-	323	36
35 Man-made fibre yarn and woven cloth	114 525	13 794	98 240	16	935	-	-	112 985	1 540





Table B.3.5

## Water Discharge and Consumption by Sector, 1991 \* (continued)

Sector	Total intake	Municipal sewers	Discharge					Total	Consumption <sup>1</sup>
			Surface-fresh	Surface-salt	Ground	Other	Transfer		
36 Wool yarn and woven cloth	3 275	1 587	1 302	-	107	-	-	2 996	279
37 Broad knitted fabrics	281	218	-	-	-	-	-	218	62
38 Miscellaneous textile products	12 582	11 164	-	-	-	-	-	11 164	1 418
39 Carpets, mats and rugs	3 445	3 135	-	-	-	-	-	3 135	311
40 Clothing excluding hosiery	8 743	8 306	-	-	-	-	-	8 306	437
41 Hosiery	604	573	-	-	-	-	-	573	30
42 Sawmills, planing mill and shingle mill products	64 175	7 394	40 028	800	2 528	-	51	50 801	13 374
43 Veneer and plywood	2 121	1 228	-	-	-	-	-	1 228	893
44 Sash, door and other millwork	3 244	2 519	-	-	-	-	-	2 519	725
45 Wooden boxes and coffins	370	333	-	-	-	-	-	333	37
46 Other wood industries	3 815	2 901	-	-	-	-	-	2 901	914
47 Household furniture	2 432	2 310	-	-	-	-	-	2 310	122
48 Office furniture	1 280	1 216	-	-	-	-	-	1 216	64
49 Other furniture and fixtures	2 218	2 107	-	-	-	-	-	2 107	111
50 Pulp and paper	2 921 682	202 428	1 779 939	739 061	18 067	-	69	2 739 564	182 118
51 Asphalt roofing	115	83	-	-	-	-	-	83	32
52 Paper boxes and bags	1 815	1 676	-	-	-	-	-	1 676	139
53 Other converted paper products	18 968	14 652	98	1 693	5	-	-	16 448	2 520
54 Printing and publishing	11 637	10 473	-	-	-	-	-	10 473	1 164
55 Platemaking, typesetting and bindery	1 717	1 631	-	-	-	-	-	1 631	86
56 Primary steel	1 061 310	25 914	983 624	3 673	69	-	89	1 013 369	47 941
57 Steel pipes and tubes	4 697	3 698	459	-	64	-	-	4 221	477
58 Iron foundries	91 473	4 723	83 394	-	14	-	23	88 155	3 318
59 Non-ferrous metal smelting and refining	444 960	62 821	295 280	26 037	21 506	-	313	405 958	39 002
60 Aluminum rolling, casting and extruding	3 780	2 934	112	-	-	-	7	3 053	727
61 Copper and alloy rolling, casting and extruding	1 088	1 025	-	-	-	-	10	1 035	53
62 Other rolling, casting and extruding non-ferrous metal products	2 355	2 237	-	-	-	-	-	2 237	118
63 Power boilers and structural metals	3 478	3 191	106	-	2	-	-	3 298	180
64 Ornamental and architectural metal products	5 966	5 369	-	-	-	-	-	5 369	597
65 Stamped, pressed and coated metals	9 230	8 768	40	5	152	-	2	8 968	262
66 Wire and wire products	15 802	9 764	4 678	-	670	-	22	15 135	668
67 Hardware, tools and cutlery	10 956	10 662	-	-	-	-	-	10 662	294
68 Heating equipment	1 574	1 416	-	-	-	-	-	1 416	157
69 Machine shops	6 928	6 235	-	-	-	-	-	6 235	693
70 Other metal fabricating	5 031	4 528	-	-	-	-	-	4 528	503
71 Agricultural implements	2 296	2 240	-	-	-	-	-	2 240	56
72 Commercial refrigeration and air conditioning equipment	1 030	927	-	-	-	-	-	927	103
73 Other machinery and equipment	19 796	15 837	-	-	-	-	-	15 837	3 959
74 Aircraft and aircraft parts	26 913	24 620	1 179	-	-	-	2	25 801	1 112
75 Motor vehicles	22 271	20 694	-	-	-	-	-	20 694	1 577
76 Trucks, bus bodies and trailers	3 678	3 310	-	-	-	-	-	3 310	368
77 Motor vehicle parts and accessories	52 263	39 933	6 312	-	217	-	8	46 470	5 793
78 Railroad rolling stock	893	639	11	130	14	-	35	829	64
79 Shipbuilding and repair	4 455	2 087	1 460	775	82	-	-	4 404	51
80 Miscellaneous transportation equipment	1 424	1 282	-	-	-	-	-	1 282	142
81 Small electrical appliances	710	687	-	-	-	-	-	687	23
82 Major appliances (electric and non-electric)	1 964	1 767	-	-	-	-	-	1 767	196
83 Other electrical and electronic products	456	433	-	-	-	-	-	433	23
84 Record players, radio and tv receivers	11 223	10 101	-	-	-	-	-	10 101	1 122
85 Communication and other electronic equipment	3 136	2 979	-	-	-	-	-	2 979	157
86 Office, store and business machines	2 365	1 892	-	-	-	-	-	1 892	473
87 Communications, energy wire and cable	928	742	-	-	-	-	-	742	186
88 Batteries	7 426	6 683	-	-	-	-	-	6 683	743
89 Clay products	676	338	-	-	-	-	-	338	338



Table B.3.5

## Water Discharge and Consumption by Sector, 1991 \* (continued)

Sector	Total intake	Discharge						Total Consumption <sup>1</sup>	
		Municipal sewers	Direct						
			Surface-fresh	Surface-salt	Ground	Other	Transfer		
90 Hydraulic cement	32 224	2 004	24 734	-	728	-	-	27 466	4 758
91 Concrete products	1 661	657	8	1	180	-	1	847	814
92 Ready-mix concrete	26 969	2 641	93	21	5 828	-	340	8 924	18 045
93 Glass and glass products	11 571	9 278	1 774	-	12	-	16	11 080	491
94 Miscellaneous non-metallic mineral products	61 818	6 636	26 358	2	522	-	725	34 244	27 574
95 Refined petroleum and coal products	445 864	12 129	300 646	96 746	1 471	-	229	411 221	34 644
96 Industrial chemicals n.e.c.	1 195 902	8 648	1 098 792	4 384	873	-	618	1 113 314	82 587
97 Chemicals products n.e.c.	68 439	10 364	52 982	12	1 578	-	41	64 978	3 461
98 Plastic and synthetic resin	41 847	2 766	33 301	-	57	-	21	36 145	5 702
99 Pharmaceuticals and medicines	5 543	3 328	585	-	39	-	-	3 953	1 590
100 Paint and varnish	3 070	1 569	716	-	25	-	1	2 310	760
101 Soap and cleaning compounds	9 524	8 548	-	-	-	-	2	8 550	974
102 Toilet preparations	1 435	1 292	-	-	-	-	-	1 292	144
103 Other manufacturing industries	4 513	4 287	-	-	-	-	-	4 287	226
104 Jewellery and precious metals	591	561	-	-	-	-	-	561	30
105 Sporting goods and toys	864	806	-	-	-	-	-	806	58
106 Signs and displays	1 004	904	-	-	-	-	-	904	100
107 Floor tile, linoleum and coated fabric	346	329	-	-	-	-	-	329	17
Sub-total, manufacturing industries (14-107)	7 447 553	919 894	4 953 146	956 846	61 952	-	8 729	6 900 568	546 985
108 Repair construction	5 097	2 039	2 039	-	-	-	-	4 078	1 019
109 Residential construction	13 528	5 411	5 411	-	-	-	-	10 822	2 706
110 Non-residential building construction	17 665	-	14 132	-	-	-	-	14 132	3 533
111 Road, highway and airport runway construction	941	-	753	-	-	-	-	753	188
112 Gas and oil facility construction	1 083	-	867	-	-	-	-	867	217
113 Electric power, dams and irrigation construction	846	-	677	-	-	-	-	677	169
114 Railway and telecommunication construction	260	-	208	-	-	-	-	208	52
115 Other engineering construction	959	-	767	-	-	-	-	767	192
116 Construction, other activities	211	84	84	-	-	-	-	169	42
117 Air transport and related services	4 852	4 124	-	-	-	-	-	4 124	728
118 Railway transport and related services	2 334	1 984	-	-	-	-	-	1 984	350
119 Water transport and related services	999	849	-	-	-	-	-	849	150
120 Truck transport	6 275	5 961	-	-	-	-	-	5 961	314
121 Urban transit systems	1 505	1 430	-	-	-	-	-	1 430	75
122 Interurban and rural transit systems	254	216	-	-	-	-	-	216	38
123 Miscellaneous transport services	3 302	3 137	-	-	-	-	-	3 137	165
124 Pipeline transport	322	306	-	-	-	-	-	306	16
125 Storage and warehousing	5 493	4 943	-	-	-	-	-	4 943	549
126 Telecommunication broadcasting	1 361	1 293	-	-	-	-	-	1 293	68
127 Telecommunication carriers	5 034	4 782	-	-	-	-	-	4 782	252
128 Postal and courier services	4 974	4 725	-	-	-	-	-	4 725	249
129 Electric power systems	28 288 065	54 366	25 890 004	2 085 796	37 577	37 694	77 539	28 182 976	105 089
130 Gas distribution systems	621	590	-	-	-	-	-	590	31
131 Water systems and other utilities	579	550	-	-	-	-	-	550	29
132 Wholesale trade	38 812	32 990	-	-	-	-	-	32 990	5 822
133 Retail trade	157 941	142 147	-	-	-	-	-	142 147	15 794
134 Finance and real estate	29 586	28 107	-	-	-	-	-	28 107	1 479
135 Insurance	3 899	3 704	-	-	-	-	-	3 704	195
137 Other business services	16 258	15 445	-	-	-	-	-	15 445	813
138 Professional business services	15 197	8 072	-	-	-	-	-	8 072	7 125
139 Advertising services	2 175	2 066	-	-	-	-	-	2 066	109
140 Educational services	3 097	2 787	-	-	-	-	-	2 787	310
141 Other health and social services	86 061	77 455	-	-	-	-	-	77 455	8 606
142 Accommodation and food services	189 511	170 560	-	-	-	-	-	170 560	18 951
143 Motion picture and video industries	4 599	4 369	-	-	-	-	-	4 369	230
144 Other amusement and recreational services	78 299	70 469	-	-	-	-	-	70 469	7 830
145 Other personal services	50 393	47 873	-	-	-	-	-	47 873	2 520
146 Laundries and cleaners	32 864	29 578	-	-	-	-	-	29 578	3 286



Table B.3.5

**Water Discharge and Consumption by Sector, 1991 \*** (continued)

Sector	Total intake	Municipal sewers	Discharge					Total	Consumption <sup>1</sup>
			Surface-fresh	Surface-salt	Ground	Other	Transfer		
147 Membership organizations (excluding religious) and other services	30 461	28 938	-	-	-	-	-	28 938	1 523
<b>Sub-total, business sector (1-147)</b>	<b>41 216 359</b>	<b>1 687 414</b>	<b>31 255 477</b>	<b>3 080 243</b>	<b>1 068 999</b>	<b>138 283</b>	<b>86 654</b>	<b>37 317 069</b>	<b>3 899 290</b>
<b>Non-business sector industries</b>									
<b>Private</b>									
155 Religious organizations	2 962	2 814	-	-	-	-	-	2 814	148
156 Welfare organizations	4 782	4 304	-	-	-	-	-	4 304	478
157 Sports and recreation clubs	9 591	8 634	-	-	-	-	-	8 634	957
158 Educational institutions	3 454	3 109	-	-	-	-	-	3 109	345
159 Other organizations	10 090	9 311	-	-	-	-	-	9 311	779
<b>Government</b>									
160 Hospitals	69 990	62 991	-	-	-	-	-	62 991	6 999
161 Residential care facilities	19 137	17 224	-	-	-	-	-	17 224	1 914
162 University education	46 987	42 288	-	-	-	-	-	42 288	4 699
163 Other educational services	108 438	97 595	-	-	-	-	-	97 595	10 844
164 Defence services	12 120	10 302	-	-	-	-	-	10 302	1 818
165 Other municipal government <sup>2</sup>	203 138	199 195	-	-	-	-	-	199 195	3 943
166 Other provincial and territorial government	31 939	29 370	-	-	-	-	-	29 370	2 569
167 Other federal government	16 873	15 741	-	-	-	-	-	15 741	1 132
<b>Sub-total, non-business sector (155-167)</b>	<b>539 501</b>	<b>502 877</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>502 877</b>	<b>36 624</b>
<b>Household Sector</b>									
Residential use	3 262 698	2 312 025	-	-	559 149	-	-	2 871 174	391 524
<b>Total, whole economy</b>	<b>45 018 558</b>	<b>4 502 316</b>	<b>31 255 477</b>	<b>3 080 243</b>	<b>1 628 148</b>	<b>138 283</b>	<b>86 654</b>	<b>40 691 120</b>	<b>4 327 438</b>

**Notes:**

Figures may not add up to totals due to rounding.

1. Consumption is that part of water intake that is evaporated, incorporated into products or crops, consumed by humans or livestock, or otherwise removed from the local hydrologic environment.

2. Other municipal government includes water unaccounted for or lost as leakage in municipal water systems.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.

Table B.3.6

**Direct plus Indirect Household Water Use, 1981, 1986 and 1991**

Year	Direct	Indirect	Total	Use per unit of expenditure
	million cubic metres			cubic metres per thousand 1992 dollars
1981	3 033	18 484	21 517	68.4
1986	2 896	23 933	26 829	74.4
1991	3 263	27 109	30 371	74.8

**Notes:**

Figures may not add up to totals due to rounding.

Direct use includes all water used in the home.

Indirect use measures the water required by businesses to produce the goods and services purchased by households. An estimate of the water used by foreign companies in the production of the imported goods purchased by Canadian households is included.

Total use is the sum of direct plus indirect use.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.





Table B.3.7

**Direct plus Indirect Water Intake Intensity by Industry, 1991 \***

Industry	Intake						Recirculation	Gross water use <sup>2</sup>
	Municipal source	Self-supplied						
		Surface-fresh	Surface-salt	Ground <sup>1</sup>	Other			
cubic metres per thousand 1986 dollars								
1 Agriculture and related services	1.31	216.11	3.31	26.33	0.31	247.36	12.37	259.74
2 Fishing and trapping	1.00	16.62	1.27	0.40	0.07	19.36	7.80	27.17
3 Logging and forestry	1.15	16.10	1.14	0.17	0.09	18.65	8.03	26.68
4 Gold mines	1.87	61.42	3.97	4.41	1.90	73.57	23.60	97.17
5 Other metal mines	4.58	123.86	6.90	24.62	3.77	163.73	93.90	257.63
6 Iron mines	1.38	140.20	5.93	19.80	0.17	167.48	626.44	793.92
7 Asbestos mines	2.37	80.14	6.25	24.21	0.12	113.10	19.71	132.80
8 Other non-metal mines (except coal)	4.94	108.33	8.22	5.87	0.73	128.09	92.12	220.21
9 Salt mines	1.55	103.39	24.69	14.87	0.42	144.93	47.36	192.29
10 Coal mines	1.17	38.62	3.04	6.12	1.30	50.25	33.21	83.46
11 Crude petroleum and natural gas	0.58	31.64	2.12	0.36	0.05	34.75	39.95	74.70
12 Quarries and sand pits	1.07	124.50	4.15	0.16	0.12	130.01	12.40	142.41
13 Services incidental to mineral extraction	1.26	38.69	2.84	0.30	0.14	43.23	12.34	55.57
14 Meat and meat products	5.13	174.15	4.01	19.60	0.26	203.15	13.48	216.63
15 Poultry products	6.23	162.13	3.48	28.24	0.38	200.46	15.18	215.64
16 Fish products	13.71	27.11	27.47	2.71	0.37	71.37	10.95	82.32
17 Fruits and vegetables	9.63	44.68	2.09	4.25	0.29	60.94	22.67	83.62
18 Dairy products	5.36	153.43	3.44	16.95	0.31	179.49	17.83	197.32
19 Miscellaneous food products	10.06	53.13	2.02	4.30	0.82	70.33	21.98	92.31
20 Feed	2.84	88.70	3.10	7.29	0.22	102.15	16.67	118.83
21 Vegetable oil mills (excluding corn oil)	2.55	164.24	2.66	13.07	0.27	182.79	72.66	255.45
22 Biscuits	4.70	37.08	1.87	1.31	0.22	45.19	13.43	58.62
23 Bread and other bakery products	5.53	47.02	2.54	2.20	0.25	57.54	13.62	71.16
24 Cane and beet sugar	3.35	31.68	0.91	0.50	0.63	37.08	15.71	52.79
25 Soft drinks	7.06	31.24	1.75	0.48	0.21	40.74	19.46	60.20
26 Distillery products	6.84	52.58	2.08	7.57	0.50	69.56	15.59	85.15
27 Brewery products	15.27	31.03	1.74	0.52	0.16	48.73	17.02	65.75
28 Wine	8.30	24.68	1.59	0.27	0.08	34.93	10.75	45.68
29 Tobacco products	2.86	69.87	1.88	6.08	0.23	80.92	13.77	94.69
30 Rubber products	5.14	49.04	2.82	3.79	0.41	61.21	40.23	101.44
31 Plastic products	13.08	62.67	3.46	0.37	0.37	79.96	82.70	162.67
32 Leather tanneries	10.16	58.43	2.43	4.23	0.16	75.41	9.79	85.20
33 Footwear	3.33	23.64	1.50	0.46	0.10	29.04	7.72	36.76
34 Miscellaneous leather and allied products	4.20	34.14	1.86	0.37	0.18	40.74	15.04	55.79
35 Man-made fibre yarn and woven cloth	8.31	108.13	3.35	0.83	0.13	120.76	47.01	167.76
36 Wool yarn and woven cloth	11.47	47.04	2.94	0.15	0.06	61.65	11.91	73.56
37 Broad knitted fabrics	4.13	49.08	2.39	0.30	0.08	55.99	18.36	74.34
38 Miscellaneous textile products	8.27	42.52	2.43	0.23	0.13	53.59	18.46	72.05
39 Carpets, mats and rugs	8.02	48.89	2.50	0.31	0.10	59.82	40.49	100.32
40 Clothing excluding hosiery	3.65	25.41	1.45	0.18	0.05	30.73	8.49	39.22
41 Hosiery	4.22	47.76	2.70	0.24	0.10	55.02	15.76	70.78
42 Sawmills, planing mill and shingle mill products	3.04	42.05	3.89	0.44	0.07	49.48	9.64	59.13
43 Veneer and plywood	3.73	35.39	2.77	0.13	0.07	42.09	9.10	51.19
44 Sash, door and other millwork	3.22	34.51	2.60	0.24	0.12	40.70	11.28	51.98
45 Wooden boxes and coffins	3.11	38.34	3.02	0.22	0.08	44.77	9.91	54.67
46 Other wood industries	5.30	64.20	4.96	0.21	0.12	74.80	15.79	90.59
47 Household furniture	3.82	37.07	2.48	0.21	0.12	43.71	12.82	56.54
48 Office furniture	3.36	33.22	2.02	0.23	0.18	39.03	16.43	55.45
49 Other furniture and fixtures	3.95	39.74	2.29	0.29	0.23	46.50	22.25	68.75
50 Pulp and paper	11.18	310.02	9.91	2.39	2.60	336.11	174.74	510.85
51 Asphalt roofing	2.21	49.55	3.44	0.95	0.61	56.77	34.17	90.94
52 Paper boxes and bags	5.35	115.60	4.01	0.89	1.04	126.90	64.01	190.91
53 Other converted paper products	11.31	86.94	3.49	0.73	0.77	103.24	50.68	153.93
54 Printing and publishing	3.73	65.85	2.86	0.44	0.52	73.40	31.66	105.06
55 Platemaking, typesetting and bindery	3.05	32.57	1.99	0.16	0.14	37.90	12.55	50.45
56 Primary steel	9.62	244.84	6.40	1.89	3.01	265.75	261.46	527.21
57 Steel pipes and tubes	5.89	98.14	3.27	0.77	1.06	109.13	105.19	214.32
58 Iron foundries	14.05	184.69	6.15	0.34	0.22	205.45	28.29	233.74
59 Non-ferrous metal smelting and refining	4.30	148.23	7.69	7.12	2.24	169.57	76.33	245.90



Table B.3.7

## Direct plus Indirect Water Intake Intensity by Industry, 1991 \* (continued)

Industry	Municipal source	Intake				Total	Recirculation	Gross water use <sup>2</sup>
		Self-supplied			Other			
		Surface-fresh	Surface-salt	Ground <sup>1</sup>				
cubic metres per thousand 1986 dollars								
60 Aluminum rolling, casting and extruding	4.41	59.95	3.56	2.07	0.66	70.66	27.81	98.47
61 Copper and alloy rolling, casting and extruding	4.42	83.86	5.33	2.31	0.72	96.65	79.69	176.34
62 Other rolling, casting and extruding non-ferrous metal products	4.21	46.02	2.92	1.32	0.41	54.88	18.37	73.25
63 Power boilers and structural metals	3.87	57.47	2.37	0.54	0.55	64.80	47.55	112.35
64 Ornamental and architectural metal products	5.51	45.83	2.25	0.46	0.38	54.44	32.44	86.88
65 Stamped, pressed and coated metals	4.66	60.69	2.66	0.56	0.56	69.14	53.93	123.07
66 Wire and wire products	8.89	78.92	3.45	0.93	0.61	92.80	56.38	149.18
67 Hardware, tools and cutlery	9.72	46.52	2.56	0.33	0.28	59.40	26.29	85.70
68 Heating equipment	5.36	37.77	1.85	0.32	0.30	45.59	26.12	71.71
69 Machine shops	7.16	54.02	2.95	0.30	0.29	64.72	28.43	93.16
70 Other metal fabricating	5.66	64.03	2.96	0.46	0.49	73.60	43.39	116.99
71 Agricultural implements	5.30	45.31	2.34	0.29	0.29	53.53	27.50	81.03
72 Commercial refrigeration and air conditioning equipment	4.69	33.54	1.76	0.31	0.25	40.55	22.64	63.19
73 Other machinery and equipment	4.70	37.19	1.94	0.29	0.24	44.36	21.83	66.19
74 Aircraft and aircraft parts	7.13	21.89	1.36	0.21	0.13	30.72	11.80	42.53
75 Motor vehicles	2.16	13.84	0.84	0.14	0.08	17.06	7.51	24.56
76 Trucks, bus bodies and trailers	5.82	34.59	1.87	0.41	0.28	42.97	22.38	65.35
77 Motor vehicle parts and accessories	5.72	43.17	2.10	0.34	0.30	51.62	28.78	80.40
78 Railroad rolling stock	2.10	35.32	2.02	0.24	0.27	39.95	17.76	57.71
79 Shipbuilding and repair	4.61	24.59	1.54	0.17	0.13	31.04	12.11	43.15
80 Miscellaneous transportation equipment	4.45	25.20	1.76	0.32	0.15	31.88	10.44	42.32
81 Small electrical appliances	3.43	34.72	1.77	0.26	0.26	40.44	22.76	63.20
82 Major appliances (electric and non-electric)	4.21	38.14	2.04	0.31	0.28	44.97	24.15	69.13
83 Other electrical and electronic products	1.58	34.01	1.96	0.29	0.22	38.05	18.84	56.89
84 Record players, radio and tv receivers	21.55	9.34	0.66	0.05	0.03	31.62	5.11	36.73
85 Communication and other electronic equipment	0.81	10.17	0.73	0.07	0.04	11.81	3.21	15.02
86 Office, store and business machines	0.56	4.50	0.30	0.03	0.02	5.42	1.81	7.23
87 Communications, energy wire and cable	2.77	59.55	3.32	1.45	0.57	67.66	30.00	97.66
88 Batteries	35.09	44.24	2.88	0.52	0.23	82.96	22.19	105.14
89 Clay products	5.05	63.96	4.90	0.25	0.12	74.28	15.21	89.49
90 Hydraulic cement	7.37	149.81	9.39	8.30	0.20	175.07	28.07	203.14
91 Concrete products	4.16	54.36	3.49	1.36	0.19	63.57	15.62	79.19
92 Ready-mix concrete	13.08	68.29	3.99	2.32	4.78	92.46	16.36	108.82
93 Glass and glass products	11.32	58.19	4.06	0.18	0.12	73.87	27.25	101.12
94 Miscellaneous non-metallic mineral products	7.63	88.97	5.91	16.92	6.51	125.93	104.92	230.85
95 Refined petroleum and coal products	1.89	51.10	8.01	0.28	0.47	61.75	83.47	145.23
96 Industrial chemicals n.e.c.	7.01	279.72	7.51	0.70	0.86	295.80	158.67	454.48
97 Chemicals products n.e.c.	5.27	59.82	2.90	0.36	5.35	73.69	22.79	96.48
98 Plastic and synthetic resin	6.10	106.78	3.58	0.28	1.46	118.20	102.16	220.36
99 Pharmaceuticals and medicines	2.71	20.54	1.25	0.37	0.08	24.94	7.19	32.14
100 Paint and varnish	4.22	50.47	2.35	0.27	0.26	57.56	27.12	84.68
101 Soap and cleaning compounds	6.66	48.30	2.24	0.86	2.38	60.44	22.96	83.40
102 Toilet preparations	3.45	26.06	1.44	0.19	0.18	31.32	13.89	45.21
103 Other manufacturing industries	2.80	27.55	1.69	0.23	0.15	32.42	12.90	45.31
104 Jewellery and precious metals	1.00	12.63	0.87	0.19	0.07	14.76	4.08	18.84
105 Sporting goods and toys	3.24	41.13	2.25	0.30	0.25	47.17	22.53	69.70
106 Signs and displays	3.22	30.58	1.98	0.28	0.18	36.24	15.66	51.90
107 Floor tile, linoleum and coated fabric	4.12	58.41	3.21	0.23	0.40	66.36	26.01	92.38
108 Repair construction	1.79	19.02	1.18	0.38	0.25	22.61	11.45	34.07
109 Residential construction	2.39	23.66	1.37	0.74	0.28	28.44	12.67	41.12
110 Non-residential building construction	1.75	19.66	1.12	0.38	0.28	23.20	10.61	33.81
111 Road, highway and airport runway construction	1.47	22.32	1.61	0.25	0.30	25.95	11.58	37.53
112 Gas and oil facility construction	1.47	26.61	1.62	0.25	0.18	30.12	15.27	45.40
113 Electric power, dams and irrigation construction	1.28	13.92	0.80	0.22	0.25	16.48	7.24	23.71
114 Railway and telecommunication construction	1.24	20.29	1.03	0.27	0.18	23.01	12.16	35.17
115 Other engineering construction	1.53	20.75	1.21	0.26	0.20	23.95	10.31	34.26
116 Construction, other activities	0.91	27.52	2.28	0.08	0.05	30.83	7.95	38.78
117 Air transport and related services	2.74	24.37	2.12	0.26	0.08	29.56	10.82	40.38



Table B.3.7

**Direct plus Indirect Water Intake Intensity by Industry, 1991 \* (continued)**

Industry	Intake						Total	Recirculation	Gross water use <sup>2</sup>
	Municipal source	Self-supplied							
		Surface-fresh	Surface-salt	Ground <sup>1</sup>	Other				
	cubic metres per thousand 1986 dollars								
118 Railway transport and related services	1.26	16.20	1.36	0.19	0.10	19.11	10.23	29.34	
119 Water transport and related services	1.55	17.59	1.50	0.21	0.07	20.92	9.02	29.94	
120 Truck transport	1.26	13.50	1.35	0.09	0.06	16.26	9.16	25.42	
121 Urban transit systems	3.43	61.70	5.10	0.28	0.13	70.64	18.41	89.05	
122 Interurban and rural transit systems	2.15	30.19	2.68	0.13	0.08	35.23	12.57	47.80	
123 Miscellaneous transport services	1.97	25.10	2.15	0.11	0.06	29.39	9.28	38.67	
124 Pipeline transport	0.50	32.04	2.62	0.05	0.02	35.24	5.55	40.78	
125 Storage and warehousing	5.87	28.65	2.31	0.09	0.04	36.96	7.05	44.00	
126 Telecommunication broadcasting	1.65	13.92	1.06	0.07	0.03	16.73	3.55	20.29	
127 Telecommunication carriers	0.63	7.74	0.55	0.05	0.03	9.00	2.39	11.39	
128 Postal and courier services	1.95	11.79	0.91	0.08	0.04	14.77	4.46	19.24	
129 Electric power systems	9.17	1 452.74	120.06	1.10	0.13	1 583.20	193.01	1 776.22	
130 Gas distribution systems	0.59	10.44	0.82	0.04	0.02	11.91	2.78	14.69	
131 Water systems and other utilities	2.10	43.20	3.82	0.14	0.10	49.36	16.39	65.74	
132 Wholesale trade	1.63	15.90	1.22	0.11	0.04	18.90	4.95	23.85	
133 Retail trade	4.59	39.08	3.11	0.15	0.04	46.96	7.97	54.93	
134 Finance and real estate	1.36	30.12	2.41	0.09	0.04	34.02	6.16	40.18	
135 Insurance	1.19	14.22	1.11	0.06	0.02	16.61	3.36	19.97	
136 Owner occupied dwellings	0.13	1.41	0.10	0.02	0.01	1.66	0.63	2.29	
137 Other business services	1.72	10.18	0.76	0.06	0.03	12.75	2.69	15.44	
138 Professional business services	1.75	11.69	0.88	0.07	0.03	14.41	3.09	17.50	
139 Advertising services	2.20	19.36	1.40	0.11	0.07	23.13	5.87	29.00	
140 Educational services	7.38	52.22	4.15	0.19	0.06	64.01	10.58	74.59	
141 Other health and social services	5.82	20.22	1.57	0.14	0.03	27.78	4.14	31.92	
142 Accommodation and food services	10.20	48.19	2.64	2.58	0.10	63.71	8.34	72.05	
143 Motion picture and video industries	4.13	27.89	2.14	0.16	0.05	34.36	6.54	40.90	
144 Other amusement and recreational services	19.44	51.61	3.91	0.50	0.06	75.52	9.73	85.25	
145 Other personal services	11.93	17.79	1.37	0.10	0.04	31.23	4.15	35.38	
146 Laundries and cleaners	26.41	43.82	3.43	0.15	0.21	74.03	12.72	86.74	
147 Membership organizations (excludes religious) and other services	3.18	16.58	1.32	0.07	0.04	21.20	5.05	26.25	
148 Operating supplies	2.36	22.00	1.19	0.28	0.19	26.02	13.09	39.11	
149 Office supplies	3.00	43.84	1.98	0.34	0.38	49.54	21.48	71.02	
150 Cafeteria supplies	4.78	95.22	2.85	9.98	0.27	113.09	14.65	127.75	
151 Laboratory supplies	0.83	18.92	0.82	0.27	0.09	20.94	8.81	29.75	
152 Travel and entertainment	4.59	28.36	2.16	0.72	0.08	35.90	10.22	46.12	
153 Advertising and promotion	2.56	33.98	1.79	0.22	0.21	38.77	14.59	53.36	
154 Transportation margins	1.35	14.99	1.37	0.14	0.07	17.92	9.09	27.01	
155 Religious organizations	2.68	61.87	4.99	0.12	0.05	69.71	10.92	80.64	
156 Welfare organizations	5.35	44.19	3.47	0.20	0.05	53.26	8.40	61.66	
157 Sports and recreation clubs	15.35	62.11	4.42	1.26	0.07	83.22	10.96	94.18	
158 Educational institutions	4.12	35.57	2.82	0.17	0.03	42.71	6.48	49.19	
159 Other organizations	4.36	63.42	4.96	0.45	0.05	73.24	10.69	83.93	
160 Hospitals	4.29	17.95	1.26	0.27	0.03	23.80	4.03	27.83	
161 Residential care facilities	6.75	19.39	1.10	0.90	0.04	28.19	3.84	32.03	
162 University education	7.04	23.97	1.85	0.10	0.04	33.01	5.58	38.60	
163 Other educational services	4.83	24.01	1.91	0.06	0.03	30.84	4.74	35.58	
164 Defence services	2.45	15.82	1.19	0.17	0.07	19.69	5.14	24.83	
165 Other municipal government <sup>3</sup>	11.39	48.87	3.95	0.22	0.04	64.47	8.69	73.15	
166 Other provincial and territorial government	3.15	22.69	1.78	0.16	0.04	27.82	5.07	32.89	
167 Other federal government	1.83	17.90	1.38	0.10	0.03	21.24	4.05	25.29	

**Notes:**

Figures may not add up to totals due to rounding.

Intensity of production is measured as direct plus indirect water use per thousand dollars of production (in constant dollars).

Direct water use is that associated with the industry's own production; indirect use is that associated with the production of the goods and services that are used by the industry.

1. Includes water pumped from mine sites (mine water).

2. Gross water use is the sum of water intake plus recirculation.

3. Other municipal government includes water unaccounted for or lost as leakage in municipal water systems.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.





Table B.3.8

## Direct plus Indirect Water Discharge and Consumption Intensity by Industry, 1991 \*

Industry	Discharge							Total Consumption <sup>1</sup>	
	Total Municipal		Direct						
	intake	sewers	Surface-fresh	Surface-salt	Ground	Other	Transfer		
	cubic metres per thousand 1986 dollars								
1 Agriculture and related services	247.36	1.01	40.67	3.40	45.64	0.10	0.11	90.93	156.43
2 Fishing and trapping	19.36	0.75	14.40	1.39	0.57	0.04	0.04	17.19	2.17
3 Logging and forestry	18.65	0.97	14.38	1.34	1.01	0.04	0.04	17.78	0.87
4 Gold mines	73.57	1.17	61.35	3.96	0.19	6.11	0.14	72.92	0.65
5 Other metal mines	163.73	0.89	122.30	13.36	6.20	19.71	0.25	162.72	1.01
6 Iron mines	167.48	0.87	145.09	6.39	13.54	0.14	0.41	166.45	1.04
7 Asbestos mines	113.10	1.15	101.79	6.44	2.42	0.14	0.22	112.16	0.94
8 Other non-metal mines (except coal)	128.09	0.92	101.63	9.82	14.21	0.19	0.30	127.07	1.02
9 Salt mines	144.93	1.11	106.18	27.02	0.34	5.43	0.41	140.49	4.44
10 Coal mines	50.25	2.56	39.22	4.74	0.58	2.45	0.13	49.68	0.57
11 Crude petroleum and natural gas	34.75	0.40	28.65	2.15	0.40	0.06	0.08	31.73	3.02
12 Quarries and sand pits	130.01	0.76	108.84	4.21	0.21	0.10	0.14	114.27	15.74
13 Services incidental to mineral extraction	43.23	0.96	36.54	2.96	0.87	0.08	0.10	41.51	1.72
14 Meat and meat products	203.15	4.21	45.21	4.38	33.41	0.09	0.30	87.61	115.55
15 Poultry products	200.46	13.91	46.34	3.88	30.72	0.08	0.24	95.16	105.29
16 Fish products	71.37	5.89	26.96	34.42	1.15	0.06	0.12	68.59	2.78
17 Fruits and vegetables	60.94	7.10	32.63	3.69	3.27	0.06	1.63	48.38	12.56
18 Dairy products	179.49	4.56	45.01	4.16	28.29	0.08	0.13	82.24	97.25
19 Miscellaneous food products	70.33	9.67	31.26	2.86	5.74	0.05	0.08	49.68	20.65
20 Feed	102.15	2.38	40.90	3.49	12.35	0.09	0.11	59.32	42.83
21 Vegetable oil mills (excluding corn oil)	182.79	2.00	76.55	2.77	22.55	0.08	0.09	104.05	78.74
22 Biscuits	45.19	4.15	27.99	3.37	1.96	0.05	0.07	37.58	7.60
23 Bread and other bakery products	57.54	4.80	34.10	3.33	3.20	0.06	0.10	45.59	11.95
24 Cane and beet sugar	37.08	2.05	29.14	2.31	0.82	0.02	0.03	34.36	2.72
25 Soft drinks	40.74	4.48	28.98	2.38	0.46	0.06	0.10	36.46	4.28
26 Distillery products	69.56	15.25	42.49	3.06	1.58	0.04	0.08	62.51	7.06
27 Brewery products	48.73	14.91	26.23	3.03	0.55	0.05	0.06	44.82	3.91
28 Wine	34.93	6.93	22.46	2.37	0.52	0.04	0.06	32.39	2.54
29 Tobacco products	80.92	2.47	27.82	3.69	10.41	0.05	0.07	44.51	36.40
30 Rubber products	61.21	3.60	51.62	3.17	0.25	0.09	0.12	58.83	2.37
31 Plastic products	79.96	11.57	60.90	4.03	0.26	0.08	0.13	76.98	2.98
32 Leather tanneries	75.41	9.35	30.99	2.59	7.09	0.07	0.12	50.21	25.21
33 Footwear	29.04	3.02	21.15	1.88	0.57	0.04	0.06	26.72	2.33
34 Miscellaneous leather and allied products	40.74	3.81	30.50	3.40	0.47	0.05	0.07	38.30	2.45
35 Man-made fibre yarn and woven cloth	120.76	8.83	105.12	3.91	0.69	0.08	0.12	118.76	2.00
36 Wool yarn and woven cloth	61.65	7.96	47.97	3.15	0.61	0.07	0.11	59.86	1.79
37 Broad knitted fabrics	55.99	3.93	47.88	2.61	0.27	0.05	0.09	54.84	1.14
38 Miscellaneous textile products	53.59	7.42	41.17	2.86	0.23	0.06	0.09	51.83	1.76
39 Carpets, mats and rugs	59.82	7.45	47.64	2.78	0.24	0.06	0.09	58.26	1.57
40 Clothing excluding hosiery	30.73	3.43	24.54	1.64	0.19	0.03	0.05	29.89	0.85
41 Hosiery	55.02	4.08	46.22	3.33	0.22	0.06	0.10	54.01	1.00
42 Sawmills, planing mill and shingle mill products	49.48	1.83	40.98	3.15	0.83	0.07	0.11	46.96	2.52
43 Veneer and plywood	42.09	2.33	34.54	2.85	0.32	0.06	0.10	40.20	1.89
44 Sash, door and other millwork	40.70	2.51	33.43	2.91	0.25	0.07	0.09	39.26	1.44
45 Wooden boxes and coffins	44.77	2.54	37.16	3.22	0.34	0.07	0.10	43.41	1.35
46 Other wood industries	74.80	3.91	62.83	5.19	0.36	0.11	0.17	72.57	2.23
47 Household furniture	43.71	3.48	35.33	3.39	0.21	0.06	0.09	42.56	1.15
48 Office furniture	39.03	2.91	32.27	2.39	0.19	0.07	0.07	37.89	1.13
49 Other furniture and fixtures	46.50	3.45	38.51	2.77	0.24	0.08	0.08	45.12	1.38
50 Pulp and paper	336.11	15.03	244.30	60.40	1.66	0.22	0.35	321.98	14.13
51 Asphalt roofing	56.77	2.05	44.15	7.12	0.28	0.06	0.11	53.76	3.01
52 Paper boxes and bags	126.90	6.48	92.74	21.46	0.64	0.10	0.14	121.57	5.34
53 Other converted paper products	103.24	10.81	72.07	14.84	0.47	0.11	0.13	98.43	4.81
54 Printing and publishing	73.40	4.10	55.05	11.00	0.35	0.06	0.10	70.65	2.74
55 Platemaking, typesetting and bindery	37.90	2.91	29.90	3.76	0.15	0.05	0.07	36.84	1.06
56 Primary steel	265.75	5.34	242.57	7.19	1.02	0.41	0.26	256.78	8.97
57 Steel pipes and tubes	109.13	4.62	96.47	3.60	0.49	0.22	0.13	105.53	3.60
58 Iron foundries	205.45	6.82	186.39	6.16	0.25	0.17	0.25	200.04	5.41
59 Non-ferrous metal smelting and refining	169.57	7.95	134.02	11.91	4.32	5.67	0.30	164.17	5.40



Table B.3.8

## Direct plus Indirect Water Discharge and Consumption Intensity by Industry, 1991 \* (continued)

Industry	Discharge							Total Consumption <sup>1</sup>	
	Total intake	Municipal sewers	Direct				Transfer		
			Surface-fresh	Surface-salt	Ground	Other			
	cubic metres per thousand 1986 dollars								
60 Aluminum rolling, casting and extruding	70.66	4.77	55.73	4.80	1.27	1.63	0.14	68.34	2.32
61 Copper and alloy rolling, casting and extruding	96.65	6.21	78.00	6.67	1.44	1.81	0.23	94.35	2.29
62 Other rolling, casting and extruding non-ferrous metal products	54.88	4.47	43.36	3.68	0.79	1.02	0.11	53.43	1.45
63 Power boilers and structural metals	64.80	3.06	56.57	2.61	0.31	0.17	0.09	62.80	2.00
64 Ornamental and architectural metal products	54.44	4.69	44.75	2.59	0.30	0.23	0.08	52.64	1.79
65 Stamped, pressed and coated metals	69.14	3.83	59.71	2.97	0.35	0.19	0.10	67.15	1.99
66 Wire and wire products	92.80	9.22	75.87	3.81	0.86	0.21	0.15	90.12	2.68
67 Hardware, tools and cutlery	59.40	8.99	45.68	2.81	0.23	0.16	0.10	57.96	1.44
68 Heating equipment	45.59	4.53	36.94	2.16	0.20	0.11	0.07	44.02	1.57
69 Machine shops	64.72	5.93	53.40	3.08	0.22	0.13	0.11	62.87	1.85
70 Other metal fabricating	73.60	4.47	63.08	3.24	0.31	0.19	0.11	71.40	2.20
71 Agricultural implements	53.53	4.56	44.63	2.50	0.21	0.09	0.09	52.07	1.45
72 Commercial refrigeration and air conditioning equipment	40.55	4.04	32.74	2.02	0.20	0.12	0.07	39.19	1.36
73 Other machinery and equipment	44.36	3.61	36.54	2.12	0.19	0.13	0.07	42.67	1.70
74 Aircraft and aircraft parts	30.72	6.44	21.58	1.50	0.15	0.13	0.05	29.84	0.88
75 Motor vehicles	17.06	1.83	13.63	0.92	0.07	0.03	0.03	16.51	0.55
76 Trucks, bus bodies and trailers	42.97	5.02	33.57	2.25	0.24	0.13	0.07	41.28	1.69
77 Motor vehicle parts and accessories	51.62	4.46	42.73	2.30	0.21	0.12	0.08	49.90	1.72
78 Railroad rolling stock	39.95	1.48	34.83	2.27	0.16	0.10	0.11	38.96	0.99
79 Shipbuilding and repair	31.04	2.55	25.20	2.20	0.20	0.07	0.06	30.28	0.76
80 Miscellaneous transportation equipment	31.88	3.84	24.54	2.00	0.16	0.08	0.07	30.69	1.19
81 Small electrical appliances	40.44	2.98	33.63	2.27	0.18	0.08	0.07	39.21	1.23
82 Major appliances (electric and non-electric)	44.97	3.55	37.12	2.47	0.20	0.09	0.08	43.51	1.46
83 Other electrical and electronic products	38.05	1.29	32.96	2.38	0.20	0.13	0.07	37.03	1.02
84 Record players, radio and tv receivers	31.62	19.38	8.95	0.84	0.05	0.02	0.02	29.26	2.37
85 Communication and other electronic equipment	11.81	0.73	9.84	0.81	0.07	0.03	0.03	11.51	0.30
86 Office, store and business machines	5.42	0.46	4.34	0.35	0.03	0.01	0.01	5.20	0.22
87 Communications, energy wire and cable	67.66	2.92	56.02	4.36	0.92	1.11	0.13	65.45	2.20
88 Batteries	82.96	31.67	42.49	3.54	0.36	0.36	0.11	78.52	4.44
89 Clay products	74.28	2.79	62.61	5.32	0.20	0.12	0.18	71.22	3.06
90 Hydraulic cement	175.07	3.92	151.50	9.42	1.42	0.23	0.34	166.82	8.26
91 Concrete products	63.57	2.30	53.28	3.58	0.57	0.09	0.13	59.95	3.61
92 Ready-mix concrete	92.46	3.30	63.90	4.09	4.34	0.10	0.37	76.10	16.36
93 Glass and glass products	73.87	10.28	56.79	4.75	0.18	0.10	0.16	72.27	1.60
94 Miscellaneous non-metallic mineral products	125.93	5.44	92.97	7.16	0.76	0.21	0.66	107.19	18.74
95 Refined petroleum and coal products	61.75	1.15	48.20	8.25	0.31	0.05	0.09	58.06	3.69
96 Industrial chemicals n.e.c.	295.80	2.27	269.38	8.14	0.47	0.26	0.36	280.88	14.93
97 Chemicals products n.e.c.	73.69	4.03	62.51	3.19	0.88	0.14	0.12	70.86	2.83
98 Plastic and synthetic resin	118.20	2.30	104.39	4.08	0.29	0.09	0.16	111.31	6.89
99 Pharmaceuticals and medicines	24.94	2.04	17.80	1.74	0.57	0.03	0.05	22.22	2.72
100 Paint and varnish	57.56	2.30	49.18	2.65	0.26	0.09	0.09	54.57	3.00
101 Soap and cleaning compounds	60.44	7.73	42.40	3.55	1.08	0.07	0.09	54.92	5.52
102 Toilet preparations	31.32	3.12	23.99	2.67	0.16	0.04	0.05	30.03	1.29
103 Other manufacturing industries	32.42	2.56	26.05	2.40	0.20	0.09	0.06	31.37	1.05
104 Jewellery and precious metals	14.76	0.98	12.00	1.09	0.14	0.13	0.03	14.38	0.39
105 Sporting goods and toys	47.17	2.68	39.59	2.93	0.22	0.08	0.09	45.58	1.59
106 Signs and displays	36.24	2.74	29.80	2.26	0.17	0.09	0.07	35.14	1.09
107 Floor tile, linoleum and coated fabric	66.36	3.21	56.84	3.70	0.23	0.08	0.12	64.18	2.18
108 Repair construction	22.61	1.30	18.27	1.37	0.19	0.04	0.05	21.22	1.39
109 Residential construction	28.44	1.83	21.08	1.65	0.68	0.05	0.06	25.35	3.09
110 Non-residential building construction	23.20	1.21	18.74	1.29	0.26	0.05	0.05	21.58	1.62
111 Road, highway and airport runway construction	25.95	0.83	20.87	1.73	0.31	0.04	0.05	23.84	2.11
112 Gas and oil facility construction	30.12	1.12	25.62	1.77	0.34	0.10	0.06	29.00	1.13
113 Electric power, dams and irrigation construction	16.48	0.80	13.31	0.92	0.25	0.06	0.04	15.36	1.11
114 Railway and telecommunication construction	23.01	1.00	19.37	1.23	0.20	0.14	0.04	21.97	1.03
115 Other engineering construction	23.95	1.05	20.03	1.34	0.24	0.06	0.05	22.76	1.18
116 Construction, other activities	30.83	0.70	27.01	2.35	0.09	0.05	0.08	30.28	0.56
117 Air transport and related services	29.56	2.35	22.79	2.31	0.34	0.06	0.06	27.92	1.64



Table B.3.8

**Direct plus Indirect Water Discharge and Consumption Intensity by Industry, 1991 \* (continued)**

Industry	Discharge							Total Consumption <sup>1</sup>	
	Total Municipal		Direct						
	intake	sewers	Surface-fresh	Surface-salt	Ground	Other	Transfer		
	cubic metres per thousand 1986 dollars								
118 Railway transport and related services	19.11	1.00	15.36	1.48	0.18	0.04	0.04	18.10	1.02
119 Water transport and related services	20.92	1.23	16.28	1.70	0.29	0.03	0.04	19.58	1.35
120 Truck transport	16.26	1.08	12.95	1.45	0.09	0.02	0.03	15.63	0.64
121 Urban transit systems	70.64	2.91	60.19	5.41	0.29	0.11	0.17	69.07	1.56
122 Interurban and rural transit systems	35.23	1.78	29.33	2.87	0.14	0.05	0.08	34.25	0.98
123 Miscellaneous transport services	29.39	1.72	24.44	2.26	0.11	0.05	0.07	28.64	0.75
124 Pipeline transport	35.24	0.35	31.76	2.59	0.08	0.06	0.09	34.93	0.31
125 Storage and warehousing	36.96	5.21	27.98	2.53	0.10	0.05	0.08	35.96	1.00
126 Telecommunication broadcasting	16.73	1.48	13.39	1.25	0.08	0.03	0.04	16.27	0.46
127 Telecommunication carriers	9.00	0.58	7.34	0.77	0.04	0.02	0.02	8.77	0.23
128 Postal and courier services	14.77	1.78	11.11	1.18	0.09	0.02	0.03	14.22	0.56
129 Electric power systems	1 583.20	3.40	1 447.69	116.80	2.29	2.50	4.33	1 577.01	6.19
130 Gas distribution systems	11.91	0.51	10.25	0.85	0.04	0.02	0.03	11.69	0.22
131 Water systems and other utilities	49.36	1.75	42.20	4.02	0.16	0.07	0.12	48.32	1.04
132 Wholesale trade	18.90	1.39	15.04	1.47	0.15	0.03	0.04	18.11	0.79
133 Retail trade	46.96	4.03	37.98	3.35	0.21	0.07	0.11	45.75	1.22
134 Finance and real estate	34.02	1.16	29.45	2.59	0.12	0.05	0.09	33.46	0.56
135 Insurance	16.61	1.06	13.68	1.29	0.09	0.02	0.04	16.18	0.43
136 Owner occupied dwellings	1.66	0.10	1.35	0.11	0.01	0.00	0.00	1.59	0.08
137 Other business services	12.75	1.59	9.67	0.95	0.08	0.02	0.03	12.33	0.42
138 Professional business services	14.41	1.17	11.12	1.09	0.08	0.02	0.03	13.52	0.89
139 Advertising services	23.13	2.02	18.30	1.90	0.13	0.03	0.05	22.43	0.70
140 Educational services	64.01	6.51	50.90	4.43	0.26	0.09	0.15	62.34	1.67
141 Other health and social services	27.78	5.19	19.32	1.67	0.20	0.04	0.06	26.48	1.30
142 Accommodation and food services	63.71	9.19	32.35	3.02	4.04	0.06	0.12	48.77	14.94
143 Motion picture and video industries	34.36	3.80	26.65	2.46	0.22	0.05	0.08	33.26	1.10
144 Other amusement and recreational services	75.52	17.40	48.31	4.29	0.75	0.09	0.14	70.97	4.54
145 Other personal services	31.23	11.25	17.15	1.48	0.14	0.03	0.05	30.09	1.14
146 Laundries and cleaners	74.03	23.70	42.76	3.69	0.19	0.07	0.12	70.53	3.49
147 Membership organizations (excludes religious) and other services	21.20	2.95	15.97	1.55	0.09	0.03	0.04	20.62	0.58
148 Operating supplies	26.02	2.04	20.80	1.70	0.19	0.06	0.05	24.83	1.19
149 Office supplies	49.54	3.11	37.06	6.96	0.28	0.05	0.07	47.52	2.02
150 Cafeteria supplies	113.09	4.43	34.47	3.54	15.75	0.07	0.20	58.46	54.64
151 Laboratory supplies	20.94	0.62	17.43	0.96	0.30	0.09	0.03	19.43	1.51
152 Travel and entertainment	35.90	4.08	23.89	2.38	1.08	0.05	0.07	31.56	4.34
153 Advertising and promotion	38.77	2.58	29.66	4.89	0.19	0.04	0.06	37.42	1.35
154 Transportation margins	17.92	1.13	14.28	1.48	0.14	0.03	0.04	17.09	0.83
155 Religious organizations	69.71	2.30	61.12	5.12	0.16	0.11	0.18	68.99	0.72
156 Welfare organizations	53.26	4.71	42.81	3.75	0.28	0.08	0.12	51.76	1.50
157 Sports and recreation clubs	83.22	13.72	54.30	4.69	1.97	0.10	0.17	74.93	8.29
158 Educational institutions	42.71	3.62	34.42	2.94	0.26	0.06	0.10	41.40	1.31
159 Other organizations	73.24	3.83	60.56	5.14	0.69	0.11	0.18	70.51	2.73
160 Hospitals	23.80	3.81	16.25	1.38	0.41	0.03	0.05	21.92	1.88
161 Residential care facilities	28.19	6.06	13.89	1.22	1.41	0.03	0.05	22.65	5.54
162 University education	33.01	6.28	23.22	2.06	0.13	0.04	0.07	31.80	1.22
163 Other educational services	30.84	4.29	23.53	2.07	0.08	0.04	0.07	30.07	0.77
164 Defence services	19.69	1.99	14.97	1.31	0.23	0.03	0.04	18.57	1.12
165 Other municipal government <sup>2</sup>	64.47	10.93	47.83	4.03	0.25	0.10	0.14	63.28	1.18
166 Other provincial and territorial government	27.82	2.78	21.83	1.92	0.19	0.05	0.06	26.83	0.99
167 Other federal government	21.24	1.63	17.18	1.54	0.14	0.03	0.05	20.57	0.67

**Notes:**

Figures may not add up to totals due to rounding.

Intensity of production is measured as direct plus indirect water use per thousand dollars of production (in constant dollars).

Direct water use is that associated with the industry's own production; indirect use is that associated with the production of the goods and services that are used by the industry.

1. Consumption is that part of water intake that is evaporated, incorporated into products or crops, consumed by humans or livestock, or otherwise removed from the local hydrologic environment.

2. Other municipal government includes water unaccounted for or lost as leakage in municipal water systems.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.





## B.4 Waste Production<sup>1</sup>

### Greenhouse gases

Table B.4.1

#### Greenhouse Gas Emissions by Sector, 1996 \*

Sector	Carbon dioxide	Methane kilotonnes	Nitrous oxide	Carbon dioxide equivalents <sup>1</sup>
<b>Business sector industries</b>				
1 Agriculture and related services <sup>2</sup>	16 000	1 070	130	79 000
2 Fishing and trapping	1 057.7	0.4	0.2	1 119.6
3 Logging and forestry	2 975.8	13.7	1.5	3 730.0
4 Gold mines	514.0	—	0.1	559.4
5 Other metal mines	1 158.1	0.1	0.2	1 228.1
6 Iron mines	1 715.7	—	0.1	1 742.4
7 Asbestos mines	148.4	—	—	153.8
8 Other non-metal mines (except coal)	1 509.7	—	—	1 523.7
9 Salt mines	130.7	—	—	132.4
10 Coal mines <sup>3</sup>	1 197.4	86	0.3	3 088
11 Crude petroleum and natural gas <sup>4</sup>	38 800	1 420	0.3	68 700
12 Quarries and sand pits	464.3	—	0.1	505.3
13 Services incidental to mineral extraction	1 105.1	0.2	0.1	1 155.3
<b>Sub-total, primary resource industries (1-13)<sup>5</sup></b>	<b>67 000</b>	<b>2 590</b>	<b>130</b>	<b>163 000</b>
14 Meat and meat products	563.9	—	—	566.5
15 Poultry products	114.8	—	—	115.4
16 Fish products	145.2	—	—	146.1
17 Fruits and vegetables	605.9	—	—	608.0
18 Dairy products	549.9	—	—	552.8
19 Miscellaneous food products	1 099.9	—	—	1 104.9
20 Feed	382.1	—	—	384.1
21 Vegetable oil mills (excluding corn oil)	237.9	—	—	238.8
22 Biscuits	64.2	—	—	64.5
23 Bread and other bakery products	235.6	—	—	237.3
24 Cane and beet sugar	316.3	—	—	317.3
25 Soft drinks	150.2	—	—	152.1
26 Distillery products	197.3	—	—	198.1
27 Brewery products	273.8	—	—	275.1
28 Wine	13.7	—	—	13.7
29 Tobacco products	37.7	—	—	37.9
30 Rubber products	312.8	—	—	314.2
31 Plastic products	403.7	—	—	405.7
32 Leather tanneries	18.6	—	—	18.6
33 Footwear	13.9	—	—	13.9
34 Miscellaneous leather and allied products	6.4	—	—	6.4
35 Man-made fibre yarn and woven cloth	477.4	—	—	479.2
36 Wool yarn and woven cloth	26.6	—	—	26.7
37 Broad knitted fabrics	47.7	—	—	47.8
38 Miscellaneous textile products	225.4	—	—	226.4
39 Carpets, mats and rugs	109.7	—	—	110.1
40 Clothing excluding hosiery	178.7	—	—	179.6
41 Hosiery	23.5	—	—	23.6
42 Sawmills, planing mill and shingle mill products	1 594.6	0.1	—	1 606.4
43 Veneer and plywood	336.1	—	—	337.6
44 Sash, door and other millwork	202.4	—	—	204.1
45 Wooden boxes and coffins	26.1	—	—	26.4
46 Other wood industries	330.3	—	—	331.8
47 Household furniture	107.5	—	—	108.1

1. The symbol \* beside a table title name indicates that there is more data associated with this table on the CD-ROM included with this publication.



Table B.4.1

**Greenhouse Gas Emissions by Sector, 1996 \*** (continued)

Sector	Carbon dioxide	Methane	Nitrous oxide	Carbon dioxide equivalents <sup>1</sup>
		kilotonnes		
48 Office furniture	56.6	--	--	56.9
49 Other furniture and fixtures	114.7	--	--	115.3
50 Pulp and paper	12 736.9	0.4	0.1	12 782.0
51 Asphalt roofing	112.0	--	--	112.5
52 Paper boxes and bags	247.1	--	--	248.2
53 Other converted paper products	181.1	--	--	181.8
54 Printing and publishing	375.4	--	--	378.2
55 Platemaking, typesetting and bindery	42.9	--	--	43.2
56 Primary steel	15 856.5	0.2	--	15 873.9
57 Steel pipes and tubes	99.1	--	--	99.5
58 Iron foundries	585.8	--	--	587.3
59 Non-ferrous metal smelting and refining	7 490.7	0.1	0.1	7 512.6
60 Aluminum rolling, casting and extruding	300.3	--	--	301.5
61 Copper and alloy rolling, casting and extruding	52.3	--	--	52.5
62 Other rolling, casting and extruding non-ferrous metal products	230.1	--	--	231.2
63 Power boilers and structural metals	218.8	--	--	220.2
64 Ornamental and architectural metal products	119.5	--	--	120.2
65 Stamped, pressed and coated metals	657.5	--	--	660.6
66 Wire and wire products	249.2	--	--	250.3
67 Hardware, tools and cutlery	104.7	--	--	105.5
68 Heating equipment	27.4	--	--	27.6
69 Machine shops	199.6	--	--	201.9
70 Other metal fabricating	246.9	--	--	248.0
71 Agricultural implements	103.9	--	--	104.4
72 Commercial refrigeration and air conditioning equipment	18.2	--	--	18.2
73 Other machinery and equipment	487.3	--	--	490.1
74 Aircraft and aircraft parts	204.1	--	--	206.1
75 Motor vehicles	1 038.7	--	--	1 043.7
76 Trucks, bus bodies and trailers	101.6	--	--	102.3
77 Motor vehicle parts and accessories	897.8	--	--	901.3
78 Railroad rolling stock	90.2	--	--	90.6
79 Shipbuilding and repair	30.7	--	--	30.8
80 Miscellaneous transportation equipment	31.6	--	--	31.6
81 Small electrical appliances	18.3	--	--	18.3
82 Major appliances (electric and non-electric)	46.1	--	--	46.3
83 Other electrical and electronic products	299.4	--	--	300.3
84 Record players, radio and tv receivers	2.7	--	--	2.7
85 Communication and other electronic equipment	115.0	--	--	115.5
86 Office, store and business machines	24.7	--	--	25.0
87 Communications, energy wire and cable	57.3	--	--	57.5
88 Batteries	15.1	--	--	15.1
89 Clay products	173.9	--	--	174.6
90 Hydraulic cement	9 392.8	0.1	0.1	9 424.4
91 Concrete products	174.9	--	--	176.3
92 Ready-mix concrete	367.1	--	--	371.6
93 Glass and glass products	711.8	--	--	714.2
94 Miscellaneous non-metallic mineral products	3 945.1	--	--	3 953.5
95 Refined petroleum and coal products	26 412.3	0.4	0.1	26 451.0
96 Industrial chemicals n.e.c.	9 879.1	0.1	36.2	21 097.9
97 Chemicals products n.e.c.	6 817.1	0.1	2.6	7 617.8
98 Plastic and synthetic resin	1 334.6	--	--	1 339.1
99 Pharmaceuticals and medicines	125.7	--	--	126.2
100 Paint and varnish	106.6	--	--	107.0
101 Soap and cleaning compounds	78.3	--	--	78.7
102 Toilet preparations	24.9	--	--	25.1
103 Other manufacturing industries	130.6	--	--	131.3
104 Jewellery and precious metals	15.5	--	--	15.5
105 Sporting goods and toys	55.2	--	--	55.5
106 Signs and displays	51.3	--	--	51.8



Table B.4.1

**Greenhouse Gas Emissions by Sector, 1996 \*** (continued)

Sector	Carbon dioxide	Methane	Nitrous oxide	Carbon dioxide equivalents <sup>1</sup>
		kilotonnes		
107 Floor tile, linoleum and coated fabric	25.1	—	—	25.2
<b>Sub-total, manufacturing industries (14-107)</b>	<b>113 139.5</b>	<b>1.9</b>	<b>39.5</b>	<b>125 427.1</b>
108 Repair construction	1 065.2	0.2	0.1	1 087.6
109 Residential construction	1 027.0	0.4	0.1	1 058.1
110 Non-residential building construction	838.2	0.2	0.1	858.7
111 Road, highway and airport runway construction	2 233.9	0.6	0.1	2 291.2
112 Gas and oil facility construction	1 234.2	0.3	0.1	1 266.6
113 Electric power, dams and irrigation construction	224.8	0.1	—	231.5
114 Railway and telecommunication construction	101.9	—	—	104.3
115 Other engineering construction	144.0	—	—	147.0
116 Construction, other activities	296.8	0.1	—	304.8
117 Air transport and related services	13 728.8	0.5	1.3	14 154.1
118 Railway transport and related services	5 891.1	0.6	2.2	6 581.3
119 Water transport and related services	3 692.1	0.3	0.8	3 934.1
120 Truck transport	19 898.7	1.3	0.8	20 183.3
121 Urban transit systems	1 240.8	0.1	—	1 255.6
122 Interurban and rural transit systems	300.4	—	—	303.2
123 Miscellaneous transport services	2 221.5	0.2	0.2	2 276.0
124 Pipeline transport <sup>6</sup>	12 068.6	248	0.1	17 318
125 Storage and warehousing	210.6	—	—	212.6
126 Telecommunication broadcasting	95.9	—	—	97.7
127 Telecommunication carriers	1 267.1	—	0.1	1 286.1
128 Postal and courier services	1 155.5	0.1	0.1	1 178.4
129 Electric power systems	93 380.8	0.8	2.5	94 170.4
130 Gas distribution systems <sup>7</sup>	2 209.2	143	—	5 221
131 Water systems and other utilities	974.4	—	—	987.3
132 Wholesale trade	10 377.8	0.9	1.1	10 731.3
133 Retail trade	9 210.7	0.6	0.7	9 439.5
134 Finance and real estate	12 420.6	0.3	0.3	12 535.1
135 Insurance	257.9	—	—	261.2
137 Other business services	279.6	—	—	281.9
138 Professional business services	543.5	—	—	554.6
139 Advertising services	430.3	—	—	436.4
140 Educational services	130.3	—	—	131.0
141 Other health and social services	1 118.1	—	0.1	1 138.2
142 Accommodation and food services	2 141.2	—	—	2 155.1
143 Motion picture and video industries	814.7	—	—	819.0
144 Other amusement and recreational services	266.1	—	—	268.9
145 Other personal services	388.3	—	—	395.0
146 Laundries and cleaners	286.8	—	—	289.1
147 Membership organizations (excluding religious) and other services	2 384.5	0.1	0.2	2 448.1
148 Operating supplies	27.1	—	—	27.1
152 Travel and entertainment	5 396.8	0.9	1.3	5 823.7
<b>Sub-total, business sector (1-152)<sup>8</sup></b>	<b>392 000</b>	<b>2 990</b>	<b>180</b>	<b>513 000</b>
<b>Non-business sector industries</b>				
<b>Private</b>				
155 Religious organizations	665.2	—	—	667.7
156 Welfare organizations	103.2	—	—	108.2
157 Sports and recreation clubs	80.6	—	—	81.3
158 Educational institutions	200.3	—	—	201.5
159 Other organizations	387.7	—	0.1	404.8
<b>Government</b>				
160 Hospitals	961.0	—	—	965.1
161 Residential care facilities	87.7	—	—	89.0
162 University education	1 014.5	0.1	0.2	1 063.5
163 Other educational services	2 817.3	0.1	0.1	2 848.5
164 Defence services	2 499.5	0.2	0.2	2 568.8
165 Other municipal government	2 556.1	0.2	0.2	2 615.1





Table B.4.1

**Greenhouse Gas Emissions by Sector, 1996 \*** (continued)

Sector	Carbon dioxide	Methane kilotonnes	Nitrous oxide	Carbon dioxide equivalents <sup>1</sup>
166 Other provincial and territorial government	1 809.0	0.1	0.1	1 855.6
167 Other federal government	1 163.2	0.1	0.1	1 185.2
<b>Sub-total, non-business sector (155-167)</b>	<b>14 345.3</b>	<b>0.9</b>	<b>0.9</b>	<b>14 654.2</b>
<b>Household sector</b>				
Heating, lighting and appliances	46 667.8	260.0	3.3	53 150.8
Motor fuels and lubricants	53 521.0	10.2	13.1	57 783.8
<b>Sub-total, household sector</b>	<b>100 188.8</b>	<b>270.2</b>	<b>16.4</b>	<b>110 934.6</b>
<b>Total, whole economy<sup>9</sup></b>	<b>507 000</b>	<b>3 260</b>	<b>200</b>	<b>639 000</b>

**Notes:**

1. Carbon dioxide equivalent emissions are estimated using global warming potentials for methane and nitrous oxide of 21 and 310 respectively (Houghton *et al.*, 1996). Due to rounding of the estimates for methane and nitrous oxide in this table figures for carbon dioxide equivalents may not equal the weighted sum of their components.

2. Agricultural emissions are presented with a lower degree of precision due to the uncertainty in the estimates of greenhouse gases from agricultural soils, manure and enteric fermentation in livestock. Carbon dioxide and carbon dioxide equivalent emissions are presented to the nearest thousand kilotonnes, while methane and nitrous oxide emissions are presented to the nearest ten kilotonnes.

3. Coal mine methane emissions are presented with a lower degree of precision (nearest kilotonne) due to the uncertainty in the estimates of fugitive methane emissions from coal mines. Coal mine carbon dioxide equivalent emissions are also shown with a lower degree of precision (nearest kilotonne) to reflect the same uncertainty.

4. Crude petroleum and natural gas carbon dioxide and methane emissions are presented with a lower degree of precision (nearest hundred and ten kilotonnes respectively) due to the uncertainty in the estimates of fugitive carbon dioxide and methane emissions from crude oil and natural gas extraction operations. Crude oil and natural gas carbon dioxide equivalent emissions are also shown with a lower degree of precision (nearest hundred kilotonnes) to reflect the same uncertainty.

5. The sub-total of primary resource industry emissions are presented with a lower degree of precision to reflect the uncertainties described in Notes 2 through 4 above. Carbon dioxide and carbon dioxide equivalent emissions are presented to the nearest thousand kilotonnes, while methane and nitrous oxide emissions are presented to the nearest ten kilotonnes.

6. Pipeline methane emissions are presented with a lower degree of precision (nearest kilotonne) due to the uncertainty in the estimates of fugitive methane emissions from pipelines. Pipeline carbon dioxide equivalent emissions are also shown with a lower degree of precision (nearest kilotonne) to reflect the same uncertainty.

7. Gas distribution system methane emissions are presented with a lower degree of precision (nearest kilotonne) due to the uncertainty in the estimates of fugitive methane emissions from gas distribution systems. Gas distribution system carbon dioxide equivalent emissions are also shown with a lower degree of precision (nearest kilotonne) to reflect the same uncertainty.

8. The sub-total of business sector emissions are presented with a lower degree of precision to reflect the uncertainties described in Notes 2 through 7 above. Carbon dioxide and carbon dioxide equivalent emissions are presented to the nearest thousand kilotonnes, while methane and nitrous oxide emissions are presented to the nearest ten kilotonnes.

9. Emissions for the total economy are presented with a lower degree of precision to reflect the uncertainties described in Notes 2 through 8 above. Carbon dioxide and carbon dioxide equivalent emissions are presented to the nearest thousand kilotonnes, while methane and nitrous oxide emissions are presented to the nearest ten kilotonnes.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.



Table B.4.2

**Direct plus Indirect Household Greenhouse Gas Emissions, 1981-1996**

Year	Direct	Indirect	Total	Emissions per unit of expenditure
	megatonnes			tonnes per thousand 1992 dollars
1981	99	235	334	1.06
1982	97	223	320	1.04
1983	85	227	312	0.99
1984	88	233	321	0.97
1985	88	237	324	0.94
1986	88	241	329	0.91
1987	90	255	345	0.92
1988	93	276	369	0.94
1989	100	298	398	0.98
1990	98	282	380	0.92
1991	95	276	371	0.91
1992	99	283	382	0.93
1993	102	283	385	0.92
1994	105	284	389	0.90
1995	108	284	392	0.89
1996	111	291	402	0.89

**Notes:**

Figures may not add up to totals due to rounding.

Direct emissions include all greenhouse gas emissions due to energy use in the home and for private motor vehicles.

Indirect emissions are those business-sector emissions due to the production of the goods and services purchased by households. An estimate of the emissions from foreign companies due to the production of the imported goods purchased by Canadian households is included.

Total emissions are the sum of direct plus indirect emissions.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.



Table B.4.3

**Direct plus Indirect Greenhouse Gas Intensity by Industry, 1996 \***

Industry	Carbon dioxide	Carbon dioxide equivalents
	tonnes per thousand 1992 dollars	
1 Agriculture and related services	1.12	3.95
2 Fishing and trapping	1.01	1.15
3 Logging and forestry	0.62	0.74
4 Gold mines	0.61	0.67
5 Other metal mines	0.56	0.61
6 Iron mines	1.79	1.88
7 Asbestos mines	1.21	1.28
8 Other non-metal mines (except coal)	1.32	1.38
9 Salt mines	0.73	0.77
10 Coal mines	0.97	2.04
11 Crude petroleum and natural gas	1.80	3.04
12 Quarries and sand pits	0.68	0.76
13 Services incidental to mineral extraction	0.52	0.56
14 Meat and meat products	0.88	2.79
15 Poultry products	0.74	2.26
16 Fish products	0.49	0.56
17 Fruits and vegetables	0.44	0.64
18 Dairy products	0.86	2.52
19 Miscellaneous food products	0.40	0.66
20 Feed	0.63	1.30
21 Vegetable oil mills (excluding corn oil)	0.79	2.03
22 Biscuits	0.29	0.38
23 Bread and other bakery products	0.34	0.45
24 Cane and beet sugar	0.74	0.84
25 Soft drinks	0.35	0.40
26 Distillery products	0.45	0.49
27 Brewery products	0.27	0.30
28 Wine	0.26	0.32
29 Tobacco products	0.32	0.77
30 Rubber products	0.32	0.40
31 Plastic products	0.36	0.44
32 Leather tanneries	0.41	0.59
33 Footwear	0.18	0.21
34 Miscellaneous leather and allied products	0.20	0.22
35 Man-made fibre yarn and woven cloth	0.41	0.45
36 Wool yarn and woven cloth	0.26	0.28
37 Broad knitted fabrics	0.29	0.31
38 Miscellaneous textile products	0.29	0.32
39 Carpets, mats and rugs	0.35	0.39
40 Clothing excluding hosiery	0.15	0.17
41 Hosiery	0.23	0.25
42 Sawmills, planing mill and shingle mill products	0.61	0.69
43 Veneer and plywood	0.71	0.78
44 Sash, door and other millwork	0.34	0.38
45 Wooden boxes and coffins	0.40	0.44
46 Other wood industries	0.57	0.62
47 Household furniture	0.29	0.31
48 Office furniture	0.27	0.29
49 Other furniture and fixtures	0.33	0.36
50 Pulp and paper	1.45	1.57
51 Asphalt roofing	0.94	1.03
52 Paper boxes and bags	0.56	0.61
53 Other converted paper products	0.52	0.58
54 Printing and publishing	0.38	0.41
55 Platemaking, typesetting and bindery	0.21	0.23
56 Primary steel	2.49	2.57
57 Steel pipes and tubes	1.12	1.16
58 Iron foundries	1.00	1.03
59 Non-ferrous metal smelting and refining	1.23	1.27
60 Aluminum rolling, casting and extruding	0.60	0.64





Table B.4.3

**Direct plus Indirect Greenhouse Gas Intensity by Industry, 1996 \*** (continued)

Industry	Carbon dioxide	Carbon dioxide equivalents
	tonnes per thousand 1992 dollars	
61 Copper and alloy rolling, casting and extruding	0.52	0.54
62 Other rolling, casting and extruding non-ferrous metal products	0.55	0.58
63 Power boilers and structural metals	0.62	0.65
64 Ornamental and architectural metal products	0.51	0.54
65 Stamped, pressed and coated metals	0.63	0.67
66 Wire and wire products	0.69	0.72
67 Hardware, tools and cutlery	0.33	0.35
68 Heating equipment	0.33	0.34
69 Machine shops	0.40	0.42
70 Other metal fabricating	0.64	0.67
71 Agricultural implements	0.34	0.37
72 Commercial refrigeration and air conditioning equipment	0.28	0.30
73 Other machinery and equipment	0.32	0.34
74 Aircraft and aircraft parts	0.20	0.21
75 Motor vehicles	0.15	0.16
76 Trucks, bus bodies and trailers	0.38	0.40
77 Motor vehicle parts and accessories	0.35	0.38
78 Railroad rolling stock	0.36	0.37
79 Shipbuilding and repair	0.27	0.29
80 Miscellaneous transportation equipment	0.19	0.21
81 Small electrical appliances	0.34	0.36
82 Major appliances (electric and non-electric)	0.32	0.35
83 Other electrical and electronic products	0.32	0.34
84 Record players, radio and tv receivers	0.10	0.11
85 Communication and other electronic equipment	0.09	0.10
86 Office, store and business machines	0.05	0.05
87 Communications, energy wire and cable	0.39	0.44
88 Batteries	0.32	0.35
89 Clay products	1.35	1.43
90 Hydraulic cement	10.53	10.63
91 Concrete products	1.51	1.54
92 Ready-mix concrete	3.25	3.31
93 Glass and glass products	0.84	0.91
94 Miscellaneous non-metallic mineral products	2.49	2.56
95 Refined petroleum and coal products	2.45	3.04
96 Industrial chemicals n.e.c.	2.20	4.12
97 Chemicals products n.e.c.	1.77	2.09
98 Plastic and synthetic resin	1.05	1.52
99 Pharmaceuticals and medicines	0.17	0.22
100 Paint and varnish	0.41	0.56
101 Soap and cleaning compounds	0.33	0.44
102 Toilet preparations	0.21	0.25
103 Other manufacturing industries	0.19	0.21
104 Jewellery and precious metals	0.13	0.14
105 Sporting goods and toys	0.26	0.28
106 Signs and displays	0.30	0.32
107 Floor tile, linoleum and coated fabric	0.37	0.46
108 Repair construction	0.35	0.38
109 Residential construction	0.34	0.39
110 Non-residential building construction	0.37	0.39
111 Road, highway and airport runway construction	1.07	1.13
112 Gas and oil facility construction	0.41	0.44
113 Electric power, dams and irrigation construction	0.31	0.33
114 Railway and telecommunication construction	0.21	0.23
115 Other engineering construction	0.34	0.37
116 Construction, other activities	0.57	0.61
117 Air transport and related services	1.85	1.96
118 Railway transport and related services	1.17	1.33
119 Water transport and related services	1.38	1.51
120 Truck transport	1.47	1.54



Table B.4.3

**Direct plus Indirect Greenhouse Gas Intensity by Industry, 1996 \*** (continued)

Industry	Carbon dioxide	Carbon dioxide equivalents
	tonnes per thousand 1992 dollars	
121 Urban transit systems	1.30	1.36
122 Interurban and rural transit systems	1.31	1.38
123 Miscellaneous transport services	0.81	0.87
124 Pipeline transport	2.90	4.11
125 Storage and warehousing	0.34	0.36
126 Telecommunication broadcasting	0.15	0.16
127 Telecommunication carriers	0.15	0.16
128 Postal and courier services	0.43	0.46
129 Electric power systems	3.66	3.72
130 Gas distribution systems	0.76	1.70
131 Water systems and other utilities	0.65	0.69
132 Wholesale trade	0.36	0.40
133 Retail trade	0.33	0.36
134 Finance and real estate	0.30	0.33
135 Insurance	0.18	0.19
136 Owner occupied dwellings	0.02	0.03
137 Other business services	0.11	0.12
138 Professional business services	0.13	0.14
139 Advertising services	0.30	0.33
140 Educational services	0.48	0.51
141 Other health and social services	0.15	0.17
142 Accommodation and food services	0.30	0.50
143 Motion picture and video industries	0.44	0.48
144 Other amusement and recreational services	0.25	0.28
145 Other personal services	0.17	0.18
146 Laundries and cleaners	0.42	0.45
147 Membership organizations (excludes religious) and other services	0.29	0.31
148 Operating supplies	0.20	0.23
149 Office supplies	0.34	0.38
150 Cafeteria supplies	0.57	1.42
151 Laboratory supplies	0.15	0.22
152 Travel and entertainment	0.96	1.09
153 Advertising and promotion	0.25	0.27
154 Transportation margins	1.27	1.36
155 Religious organizations	0.40	0.43
156 Welfare organizations	0.23	0.25
157 Sports and recreation clubs	0.39	0.49
158 Educational institutions	0.29	0.31
159 Other organizations	0.31	0.35
160 Hospitals	0.13	0.16
161 Residential care facilities	0.10	0.15
162 University education	0.22	0.24
163 Other educational services	0.19	0.20
164 Defence services	0.43	0.46
165 Other municipal government	0.30	0.32
166 Other provincial and territorial government	0.19	0.21
167 Other federal government	0.19	0.21

**Notes:**

Intensity of production is measured as direct plus indirect greenhouse gas emissions per thousand dollars of production (in constant dollars). Direct emissions are those associated with the industry's own production; indirect emissions are those associated with the production of the goods and services that are used by the industry.

Emission estimates for methane and nitrous oxide are not considered sufficiently reliable for intensities to be presented for these two gases.

Carbon dioxide equivalent emissions are estimated using global warming potentials for methane and nitrous oxide of 21 and 310 respectively (Houghton *et al.*, 1996).

Emission sources included in these estimates: combustion of fossil fuels; non-combustion uses of fossil fuels; industrial processes; agricultural soils livestock manure and enteric fermentation. Emissions from prescribed burning in the forestry industry and from waste management are excluded.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.



## B.5 Environmental Protection Expenditures<sup>1</sup>

### Government sector

Table B.5.1

#### Government Expenditures on Pollution Abatement and Control and Water Purification and Supply, 1988-89 to 1998-99

Level of government/ Activity	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
thousand dollars											
<b>All levels</b>											
Sewage collection and disposal	1 416 091	1 736 271	2 001 137	1 953 284	2 051 271	2 186 124	2 297 383	2 742 170	2 622 470	..	..
Waste collection and disposal	886 714	1 039 765	1 220 288	1 324 700	1 427 184	1 346 249	1 578 099	1 366 435	1 340 536	..	..
Other pollution control activities	268 697	357 617	397 634	318 919	263 793	239 574	240 313	204 184	186 710	..	..
Other environmental services	804 417	910 373	1 096 269	1 288 986	1 272 577	1 329 172	1 317 059	1 338 737	1 273 983	..	..
<b>Total PAC</b>	<b>3 375 919</b>	<b>4 044 027</b>	<b>4 715 327</b>	<b>4 885 888</b>	<b>5 014 824</b>	<b>5 101 119</b>	<b>5 432 854</b>	<b>5 651 526</b>	<b>5 423 699</b>	..	..
Water purification and supply	2 099 779	2 247 663	2 470 460	2 377 264	2 425 977	2 747 481	2 965 555	3 014 018	3 032 610	..	..
<b>PAC and water</b>	<b>5 475 698</b>	<b>6 291 690</b>	<b>7 185 787</b>	<b>7 263 152</b>	<b>7 440 800</b>	<b>7 848 600</b>	<b>8 398 409</b>	<b>8 665 544</b>	<b>8 456 309</b>	..	..
<b>Federal<sup>1</sup></b>											
Sewage collection and disposal	-	-	-	-	-	229 427	320 717	313 680	300 651	371 465	336 637
Waste collection and disposal	-	-	-	-	-	-	-	-	-	-	-
Other pollution control activities	70 318	112 566	117 900	20 221	4 329	11 238	14 701	13 886	5 734	4 736	4 634
Other environmental services	505 743	545 353	620 194	720 851	747 035	728 736	745 345	703 158	635 578	761 751	823 857
<b>Total PAC</b>	<b>576 061</b>	<b>657 919</b>	<b>738 094</b>	<b>741 072</b>	<b>751 364</b>	<b>969 401</b>	<b>1 080 763</b>	<b>1 030 724</b>	<b>941 963</b>	<b>1 137 952</b>	<b>1 165 127</b>
Water purification and supply	23 804	16 003	7 144	7 803	9 649	235 094	344 700	360 032	328 893	391 995	351 879
<b>PAC and water</b>	<b>599 865</b>	<b>673 922</b>	<b>745 238</b>	<b>748 875</b>	<b>761 013</b>	<b>1 204 494</b>	<b>1 425 463</b>	<b>1 390 756</b>	<b>1 270 856</b>	<b>1 529 947</b>	<b>1 517 006</b>
<b>Provincial/Territorial</b>											
Sewage collection and disposal	75 746	72 412	75 326	100 912	97 795	90 555	132 752	256 308	176 307	..	..
Waste collection and disposal	80 992	120 511	132 385	164 063	176 747	121 549	295 791	71 340	27 193	..	..
Other pollution control activities	243 650	305 030	327 307	375 799	328 171	309 945	235 753	202 178	190 023	..	..
Other environmental services	253 875	312 324	443 370	534 974	467 021	516 679	531 252	563 960	530 726	..	..
<b>Total PAC</b>	<b>654 263</b>	<b>810 277</b>	<b>978 388</b>	<b>1 175 749</b>	<b>1 069 733</b>	<b>1 038 728</b>	<b>1 195 547</b>	<b>1 093 786</b>	<b>924 248</b>	..	..
Water purification and supply	933 603	1 071 923	1 130 608	1 012 521	991 526	872 316	948 580	985 769	995 061	..	..
<b>PAC and water</b>	<b>1 587 866</b>	<b>1 882 200</b>	<b>2 108 996</b>	<b>2 188 270</b>	<b>2 061 259</b>	<b>1 911 044</b>	<b>2 144 127</b>	<b>2 079 556</b>	<b>1 919 309</b>	..	..
<b>Local<sup>2</sup></b>											
Sewage collection and disposal	1 413 609	1 734 756	2 001 997	1 954 272	2 055 776	1 950 514	2 040 714	2 419 674	2 326 654	2 359 453	2 120 795
Waste collection and disposal	817 079	935 818	1 125 905	1 228 222	1 297 355	1 253 371	1 293 064	1 310 907	1 332 125	1 425 731	1 526 713
Other pollution control activities and other environmental services <sup>3</sup>	75 200	82 615	82 331	80 949	102 610	126 821	144 190	133 007	129 091	187 658	278 565
<b>Total PAC</b>	<b>2 305 888</b>	<b>2 753 189</b>	<b>3 210 233</b>	<b>3 263 443</b>	<b>3 455 741</b>	<b>3 330 706</b>	<b>3 477 968</b>	<b>3 863 588</b>	<b>3 787 870</b>	<b>3 972 842</b>	<b>3 926 073</b>
Water purification and supply	1 758 216	1 860 963	2 078 222	2 039 593	2 105 046	2 296 765	2 479 397	2 555 689	2 528 043	2 411 235	2 478 790
<b>PAC and water</b>	<b>4 064 104</b>	<b>4 614 152</b>	<b>5 288 455</b>	<b>5 303 036</b>	<b>5 560 787</b>	<b>5 627 471</b>	<b>5 957 365</b>	<b>6 419 277</b>	<b>6 315 913</b>	<b>6 384 077</b>	<b>6 404 863</b>

#### Notes:

Fiscal year ending nearest to March 31, except for local government expenditures (calendar year).

Figures may not add up to totals due to rounding.

1. Federal government: 1998-99 numbers are estimates.

2. Local governments: 1996-97 numbers are preliminary, 1997-98 numbers are estimates and 1998-99 numbers are forecasts.

3. Includes expenditures for other pollution control activities (such as clean-up and air pollution control) and other environmental services (such as environmental assessments).

#### Sources:

Statistics Canada, Environment Accounts and Statistics Division, Public Institutions Division and Cansim, matrices 3315 (series d474861, d474862 and d474863) and 8463 (series d473046, d473047 and d473048).

1. The symbol ♣ beside a table title name indicates that there is more data associated with this table on the CD-ROM included with this publication.





Table B.5.2

**Consolidated Government Expenditures on Pollution Abatement and Control, 1970-71 to 1996-97**

Year	Sewage collection and disposal	Waste collection and disposal	Other pollution control activities	Other environmental services <sup>1</sup>	Total PAC
thousand dollars					
1970-71	228 857	98 744	..	18 662	346 263
1971-72	270 755	108 357	..	38 092	417 204
1972-73	325 307	117 707	..	131 866	574 880
1973-74	440 067	122 498	..	266 852	829 417
1974-75	505 490	169 751	..	300 691	975 932
1975-76	589 351	229 544	..	315 816	1 134 711
1976-77	784 384	245 144	..	334 214	1 363 742
1977-78	820 856	282 594	..	387 314	1 490 764
1978-79	724 175	315 782	..	445 510	1 485 467
1979-80	818 855	329 051	..	449 149	1 597 055
1980-81	926 404	390 894	..	575 249	1 892 547
1981-82	1 010 117	408 924	..	566 745	1 985 786
1982-83	972 083	456 641	..	663 137	2 091 861
1983-84	1 048 847	528 306	..	719 070	2 296 223
1984-85	979 436	514 400	..	906 192	2 400 028
1985-86	995 011	564 300	..	1 030 179	2 589 490
1986-87	1 138 000	627 700	..	888 824	2 654 524
1987-88	1 208 600	714 400	..	926 018	2 849 018
1988-89	1 416 091	886 714	268 697	804 417	3 375 919
1989-90	1 736 271	1 039 765	357 617	910 373	4 044 027
1990-91	2 001 137	1 220 288	397 634	1 096 269	4 715 327
1991-92	1 953 284	1 324 700	318 919	1 288 986	4 885 888
1992-93	2 051 271	1 427 184	263 793	1 272 577	5 014 824
1993-94	2 186 124	1 346 249	239 574	1 329 172	5 101 119
1994-95	2 297 383	1 578 099	240 313	1 317 059	5 432 854
1995-96	2 742 170	1 366 435	204 184	1 338 737	5 651 526
1996-97	2 622 470	1 340 536	186 710	1 273 983	5 423 699

**Notes:**

A historical revision of PAC expenditure data was done from 1988-89 onward. Consequently, any comparison with previous years should be made with caution.

Consolidated government expenditures exclude intergovernmental transfers.

Fiscal year ending nearest to March 31.

Figures may not add up to totals due to rounding.

1. From fiscal year 1970-71 to fiscal year 1987-88, the "Other environmental services" expenditure category includes the "Other pollution control activities" expenditure category.

**Sources:**

Statistics Canada, Environment Accounts and Statistics Division and Public Institutions Division.



Table B.5.3

## Federal Government Expenditures on Pollution Abatement and Control, 1970-71 to 1998-99

Year	Sewage collection and disposal	Waste collection and disposal	Other pollution control activities	Other environmental services	Total PAC
thousand dollars					
1970-71	8 297	-	-	-	8 297
1971-72	15 135	-	-	6 487	21 622
1972-73	27 097	-	-	72 296	99 393
1973-74	39 239	-	18 452	186 724	244 415
1974-75	32 049	-	23 273	213 472	268 794
1975-76	52 678	-	25 307	211 446	289 431
1976-77	73 734	-	28 596	204 468	306 798
1977-78	48 552	-	33 263	235 096	316 911
1978-79	116 411	-	37 053	260 537	414 001
1979-80	84 006	-	30 162	245 503	359 671
1980-81	69 378	-	35 474	238 001	342 853
1981-82	38 446	-	40 190	271 318	349 954
1982-83	50 421	-	44 742	370 909	466 072
1983-84	16 661	-	56 249	413 285	486 195
1984-85	12 986	-	58 649	419 697	491 332
1985-86	2 284	-	55 941	363 908	422 133
1986-87	-	-	61 983	383 744	445 727
1987-88	-	-	67 297	430 794	498 091
1988-89	-	-	70 318	505 743	576 061
1989-90	-	-	112 566	545 353	657 919
1990-91	-	-	117 900	620 194	738 094
1991-92	-	-	20 221	720 851	741 072
1992-93	-	-	4 329	747 035	751 364
1993-94	229 427	-	11 238	728 736	969 401
1994-95	320 717	-	14 701	745 345	1 080 763
1995-96	313 680	-	13 886	703 158	1 030 724
1996-97	300 651	-	5 734	635 578	941 963
1997-98	371 465	-	4 736	761 751	1 137 952
1998-99 <sup>e</sup>	336 637	-	4 634	823 857	1 165 127

## Notes:

A historical revision of PAC expenditure data was done from 1988-89 onward. Consequently, any comparison with previous years should be made with caution.

Fiscal year ending nearest to March 31.

Figures may not add up to totals due to rounding.

## Sources:

Statistics Canada, Environment Accounts and Statistics Division, Public Institutions Division and Cansim, matrix 3315 (series d474862 and d474863).



Table B.5.4

**Provincial/Territorial Government Expenditures on Sewage Collection and Disposal<sup>1</sup> by Province and Territory, 1970-71 to 1996-97**

Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T. <sup>2</sup>	Canada
thousand dollars													
1970-71	-	-	-	-	-	-	-	-	-	-	-	-	-
1971-72	-	-	-	-	-	-	-	-	-	-	-	-	-
1972-73	-	-	-	-	-	-	-	-	-	-	-	-	-
1973-74	-	-	-	-	-	-	-	-	-	-	-	-	-
1974-75	-	-	-	-	-	-	-	-	-	-	-	-	-
1975-76	-	-	-	-	-	-	-	-	-	-	-	-	-
1976-77	-	-	-	-	-	-	-	-	-	-	-	-	-
1977-78	-	-	-	-	-	-	-	-	-	-	-	-	-
1978-79	-	-	-	-	-	-	-	-	-	-	-	-	-
1979-80	-	-	-	-	-	-	-	-	-	-	-	-	-
1980-81	-	-	-	-	-	-	-	-	-	-	-	-	-
1981-82	-	-	-	-	-	-	-	-	-	-	-	-	-
1982-83	-	-	-	-	-	-	-	-	-	-	-	-	-
1983-84	-	-	-	-	-	-	-	-	-	-	-	-	-
1984-85	-	-	-	-	-	-	-	-	-	-	-	-	-
1985-86	-	-	-	-	-	-	-	-	-	-	-	-	-
1986-87	-	-	-	-	-	-	-	-	-	-	-	-	-
1987-88	-	-	-	-	-	-	-	-	-	-	-	-	-
1988-89	-	-	-	9 663	-	-	3 594	-	-	61 156	1 332	-	75 746
1989-90	-	-	720	9 554	-	-	-	-	-	59 729	2 409	-	72 412
1990-91	-	-	127	9 367	-	-	-	95	-	63 557	2 181	-	75 326
1991-92	-	-	92	8 191	-	-	-	64	-	89 873	2 693	-	100 912
1992-93	-	933	47	6 730	-	-	-	49	-	87 715	2 323	-	97 795
1993-94	-	170	446	5 768	-	-	-	-	10 370	71 911	1 891	-	90 555
1994-95	-	-	10 552	4 506	20 681	-	2 998	-	25 130	64 579	4 306	-	132 752
1995-96	8 851	-	14 324	18 742	45 162	100 579	5 451	-	18 808	30 581	4 223	9 590	256 308
1996-97	5 444	-	2 486	12 983	40 170	62 369	1 646	-	22 256	30 566	37	8 851	176 307

**Notes:**

Fiscal year ending nearest to March 31.

The sum of expenditures by province/territory may not be equal to the Canada total because some intergovernmental transfers may have been allocated to the Canada total and not to a particular province/territory.

1. May include some expenditures on water purification and supply.

2. Includes Nunavut.

**Sources:**

Statistics Canada, Environment Accounts and Statistics Division and Public Institutions Division.





Table B.5.5

## Provincial/Territorial Government Expenditures on Waste Collection and Disposal by Province and Territory, 1970-71 to 1996-97

Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T. <sup>1</sup>	Canada
thousand dollars													
1970-71	-	-	-	-	-	-	-	-	-	-	-	-	-
1971-72	-	-	-	-	-	-	-	-	-	-	-	-	-
1972-73	-	-	-	-	-	-	-	-	-	-	-	-	-
1973-74	-	-	-	-	-	-	-	-	-	-	-	-	-
1974-75	-	-	-	-	-	-	-	-	-	-	-	-	-
1975-76	-	-	-	-	-	-	-	-	-	-	-	-	-
1976-77	-	-	-	-	-	-	-	-	-	-	-	-	-
1977-78	-	-	-	-	-	-	-	-	-	-	-	-	-
1978-79	-	-	-	-	-	-	-	-	-	-	-	-	-
1979-80	-	-	-	-	-	-	-	-	-	-	-	-	-
1980-81	-	-	-	-	-	-	-	-	-	-	-	-	-
1981-82	-	-	-	-	-	-	-	-	-	-	-	-	-
1982-83	-	-	-	-	-	-	-	-	-	-	-	-	-
1983-84	-	-	-	-	-	-	-	-	-	-	-	-	-
1984-85	-	-	-	-	-	-	-	-	-	-	-	-	-
1985-86	-	-	-	-	-	-	-	-	-	-	-	-	-
1986-87	-	-	-	-	-	-	-	-	-	-	-	-	-
1987-88	-	-	-	-	-	-	-	-	-	-	-	-	-
1988-89	330	2 111	3 521	4 168	-	27 561	2 062	-	24 896	15 954	293	97	80 992
1989-90	163	2 169	8 817	5 001	-	36 648	5 504	6 952	28 241	26 713	206	98	120 511
1990-91	296	2 289	12 546	6 192	-	50 224	5 438	6 524	42 279	6 321	162	115	132 385
1991-92	166	3 196	12 698	6 357	-	73 066	6 520	9 252	38 758	13 720	207	124	164 063
1992-93	197	3 742	7 490	8 923	-	80 391	6 706	21 609	35 881	11 446	229	136	176 747
1993-94	129	3 791	599	8 514	-	65 071	11 443	9 285	22 670	-	49	-	121 549
1994-95	240	7 821	-	6 488	-	22 859	9 330	9 614	239 331	-	108	-	295 791
1995-96	56	4 461	-	5 716	-	4 624	8 511	9 580	38 273	-	121	-	71 340
1996-97	-	4 292	-	6 079	-	410	7 552	7 981	536	-	344	-	27 193

**Notes:**

Fiscal year ending nearest to March 31.

The sum of expenditures by province/territory may not be equal to the Canada total because some intergovernmental transfers may have been allocated to the Canada total and not to a particular province/territory.

1. Includes Nunavut.

**Sources:**

Statistics Canada, Environment Accounts and Statistics Division and Public Institutions Division.



Table B.5.6

**Provincial/Territorial Government Expenditures on Other Pollution Control Activities by Province and Territory, 1970-71 to 1996-97**

Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T. <sup>1</sup>	Canada
thousand dollars													
1970-71	253	584	2	-	-	7 902	532	128	50	689	-	87	10 227
1971-72	877	509	43	-	4 773	16 368	128	780	811	1 131	19	104	25 543
1972-73	993	226	-	-	8 965	45 197	1 498	953	1 784	2 804	36	-	62 455
1973-74	478	320	-	-	865	62 238	3 644	3 787	2 515	3 345	-	-	77 192
1974-75 <sup>e</sup>	683	360	-	-	1 173	60 974	4 265	2 775	4 657	4 395	-	-	79 282
1975-76	801	358	-	-	1 334	53 128	4 384	1 520	6 163	4 903	-	-	72 591
1976-77	784	370	263	756	1 545	57 812	3 941	1 705	5 161	14 733	-	9	87 080
1977-78	853	624	85	719	4 805	45 816	3 770	892	5 486	6 242	-	-	69 293
1978-79	1 019	723	63	823	5 839	44 122	3 687	1 419	5 189	7 033	-	-	69 916
1979-80	1 112	770	116	823	7 384	48 962	4 272	2 658	9 029	4 885	-	-	80 011
1980-81	2 708	627	3 217	916	12 462	58 966	5 165	3 931	8 719	6 076	204	-	102 991
1981-82	2 887	1 053	3 327	988	16 014	98 794	6 183	4 572	160 263	5 667	544	39	300 329
1982-83	2 619	1 174	2 889	11 060	28 028	106 544	7 776	5 599	17 908	9 160	277	-	193 034
1983-84	2 937	1 479	1 652	14 438	26 855	73 911	3 574	4 441	18 069	10 359	224	-	157 938
1984-85	2 453	1 275	178	9 599	20 476	82 814	365	4 023	16 888	10 466	295	-	148 832
1985-86 <sup>e</sup>	2 992	1 530	994	13 299	26 239	87 381	2 139	4 704	19 438	11 593	290	-	170 600
1986-87 <sup>e</sup>	3 673	1 877	1 220	16 324	32 207	107 255	2 626	5 774	23 859	14 230	356	-	209 400
1987-88 <sup>e</sup>	2 885	110	1 875	10 315	20 039	144 568	292	3 776	40 856	2 853	617	13	228 200
1988-89	2 754	193	3 214	9 694	25 080	169 887	308	4 216	24 316	3 071	48	870	243 650
1989-90	3 679	203	4 996	13 946	20 751	210 958	438	4 553	40 973	3 655	32	846	305 030
1990-91	2 559	281	5 733	13 987	-	232 815	444	29 710	40 754	11	8	1 006	327 307
1991-92	3 188	368	6 355	19 184	-	272 346	798	29 947	42 626	1	-	992	375 799
1992-93	3 274	307	2 488	17 633	-	251 741	428	4 811	44 848	1 684	-	961	328 171
1993-94	3 292	423	2 288	18 356	-	230 537	35	4 970	50 046	1	-	-	309 945
1994-95	7 464	452	3 039	8 962	-	170 680	636	5 885	38 635	1	-	-	235 753
1995-96	3 061	368	2 976	7 839	-	144 699	981	6 485	35 771	1	-	-	202 178
1996-97	576	549	3 530	5 301	-	137 772	365	5 604	36 329	-	-	-	190 023

**Notes:**

Fiscal year ending nearest to March 31.

Figures for 1974-75, 1985-86, 1986-87 and 1987-88 are estimates produced by the Environment Accounts and Statistics Division using projections of annual average growth rates of pollution abatement and control (PAC) expenditures. Therefore, these data are less reliable than data from other years.

A historical revision of PAC expenditure data was done from 1988-89 onward. Consequently, any comparison with previous years should be made with caution.

The sum of expenditures by province/territory may not be equal to the Canada total because some intergovernmental transfers may have been allocated to the Canada total and not to a particular province/territory.

1. Includes Nunavut.

**Sources:**

Statistics Canada, Environment Accounts and Statistics Division and Public Institutions Division.



Table B.5.7

## Provincial/Territorial Government Expenditures on Other Environmental Services by Province and Territory, 1970-71 to 1996-97

Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T. <sup>1</sup>	Canada
thousand dollars													
1970-71	-	-	209	-	-	3 190	48	-	-	200	-	42	3 689
1971-72	-	-	814	-	1 625	2 906	-	-	2 404	194	-	34	7 977
1972-73	-	139	778	-	2 174	4 315	-	1 005	5 240	210	-	-	13 861
1973-74	-	392	-	-	2 754	4 321	-	961	21 121	626	4	-	30 180
1974-75 <sup>e</sup>	-	670	506	1 142	3 807	7 597	139	1 733	31 001	489	21	-	47 106
1975-76	-	910	1 264	2 852	4 140	10 550	348	2 454	36 253	-	44	-	58 815
1976-77	-	687	825	814	4 471	6 921	1 046	1 959	15 070	22 970	2	-	54 765
1977-78	-	603	259	820	2 653	2 734	1 658	2 821	24 319	40 462	236	487	77 052
1978-79	-	722	473	955	4 020	2 260	1 801	2 431	23 224	43 576	-	120	79 582
1979-80	-	538	685	1 132	5 221	3 841	6 051	2 619	64 924	40 774	-	296	126 080
1980-81	-	592	1 695	1 517	20 790	2 701	1 991	3 371	143 465	40 708	-	143	216 974
1981-82	-	324	2 244	1 570	20 641	2 336	176	3 080	61 018	27 234	-	75	118 698
1982-83	-	379	1 992	1 806	69 434	2 353	13	2 975	31 703	19 708	404	72	130 838
1983-84	-	415	3 467	1 728	127 715	2 842	8 164	1 489	25 500	12 267	601	-	184 189
1984-85	-	200	2 740	2 759	311 511	2 345	7 875	13 507	26 347	18 143	612	-	386 039
1985-86 <sup>e</sup>	-	786	7 354	4 689	425 644	6 101	18 362	12 220	58 639	32 228	1 375	-	567 400
1986-87 <sup>e</sup>	-	336	3 139	2 002	181 690	2 604	7 838	5 216	25 031	13 757	587	-	242 200
1987-88 <sup>e</sup>	1 185	3 579	15 295	2 622	112 094	7 599	14 839	119 765	26 276	10 050	1 009	388	314 700
1988-89	1 106	1 664	16 838	2 329	68 425	20 726	8 048	84 482	30 260	18 381	1 011	605	253 875
1989-90	1 901	2 608	17 399	5 035	79 834	23 266	9 433	84 530	17 238	69 883	540	657	312 324
1990-91	2 057	3 144	19 817	8 219	155 056	34 620	10 269	79 836	19 871	109 354	486	645	443 370
1991-92	2 056	3 063	19 511	20 151	165 779	32 935	11 120	122 087	24 648	132 236	641	753	534 974
1992-93	3 505	2 351	22 113	14 952	189 220	32 151	15 334	20 117	22 106	143 628	779	769	467 021
1993-94	4 292	1 078	20 484	21 336	177 024	27 069	16 339	61 586	33 380	152 255	662	1 179	516 679
1994-95	2 842	484	11 899	53 477	112 424	96 077	24 287	36 265	36 958	154 555	867	1 117	531 252
1995-96	2 209	852	11 665	34 877	109 549	78 884	812	39 171	147 975	135 869	950	1 156	563 960
1996-97	3 993	853	15 299	33 253	107 095	11 369	16 220	62 155	189 666	138 911	896	1 024	530 726

## Notes:

Fiscal year ending nearest to March 31.

Figures for 1974-75, 1985-86, 1986-87 and 1987-88 are estimates produced by the Environment Accounts and Statistics Division using projections of annual average growth rates of pollution abatement and control (PAC) expenditures. Therefore, these data are less reliable than data from other years.

A historical revision of PAC expenditure data was done from 1988-89 onward. Consequently, any comparison with previous years should be made with caution.

The sum of expenditures by province/territory may not be equal to the Canada total because some intergovernmental transfers may have been allocated to the Canada total and not to a particular province/territory.

1. Includes Nunavut.

## Sources:

Statistics Canada, Environment Accounts and Statistics Division and Public Institutions Division.



Table B.5.8

**Total Provincial/Territorial Government Expenditures on Pollution Abatement and Control by Province and Territory, 1970-71 to 1996-97**

Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T. <sup>1</sup>	Canada
thousand dollars													
1970-71	253	584	211	-	-	11 092	580	128	50	889	-	129	13 916
1971-72	877	509	857	-	6 398	19 274	128	780	3 215	1 325	19	138	33 520
1972-73	993	365	778	-	11 139	49 512	1 498	1 958	7 024	3 014	36	-	76 316
1973-74	478	712	-	-	3 619	66 559	3 644	4 748	23 636	3 971	4	-	107 372
1974-75 <sup>e</sup>	683	1 030	506	1 142	4 980	68 571	4 405	4 508	35 658	4 884	21	-	126 389
1975-76	801	1 268	1 264	2 852	5 474	63 678	4 732	3 974	42 416	4 903	44	-	131 406
1976-77	784	1 057	1 088	1 570	6 016	64 733	4 987	3 664	20 231	37 703	2	9	141 845
1977-78	853	1 227	344	1 539	7 458	48 550	5 428	3 713	29 805	46 704	236	487	146 345
1978-79	1 019	1 445	536	1 778	9 859	46 382	5 488	3 850	28 413	50 609	-	120	149 498
1979-80	1 112	1 308	801	1 955	12 605	52 803	10 323	5 277	73 953	45 659	-	296	206 091
1980-81	2 708	1 219	4 912	2 433	33 252	61 667	7 156	7 302	152 184	46 784	204	143	319 965
1981-82	2 887	1 377	5 571	2 558	36 655	101 130	6 359	7 652	221 281	32 901	544	114	419 027
1982-83	2 619	1 553	4 881	12 866	97 462	108 897	7 789	8 574	49 611	28 868	681	72	323 872
1983-84	2 937	1 894	5 119	16 166	154 570	76 753	11 738	5 930	43 569	22 626	825	-	342 127
1984-85	2 453	1 475	2 918	12 358	331 987	85 159	8 240	17 530	43 235	28 609	907	-	534 871
1985-86 <sup>e</sup>	2 992	2 316	8 348	17 988	451 884	93 482	20 502	16 924	78 077	43 821	1 665	-	738 000
1986-87 <sup>e</sup>	3 673	2 213	4 359	18 326	213 897	109 859	10 464	10 990	48 889	27 986	943	-	451 600
1987-88 <sup>e</sup>	4 070	3 690	17 169	12 937	132 133	152 167	15 131	123 540	67 132	12 903	1 626	401	542 900
1988-89	4 189	3 969	23 573	25 855	93 505	218 173	14 013	88 698	79 472	98 563	2 684	1 572	654 263
1989-90	5 743	4 980	31 933	33 537	100 585	270 872	15 375	96 035	86 452	159 979	3 187	1 601	810 277
1990-91	4 912	5 715	38 223	37 765	155 056	317 658	16 152	116 164	102 904	179 243	2 837	1 766	978 388
1991-92	5 411	6 627	38 657	53 882	165 779	378 347	18 438	161 350	106 033	235 829	3 542	1 869	1 175 749
1992-93	6 976	7 333	32 138	48 237	189 220	364 283	22 469	46 586	102 835	244 474	3 331	1 866	1 069 733
1993-94	7 713	5 463	23 818	53 973	177 024	322 677	27 817	75 841	116 466	224 167	2 602	1 179	1 038 728
1994-95	10 546	8 757	25 489	73 432	133 105	289 616	37 251	51 764	340 054	219 135	5 282	1 117	1 195 547
1995-96	14 177	5 680	28 965	67 174	154 711	328 785	15 754	55 235	240 827	166 451	5 295	10 746	1 093 786
1996-97	10 012	5 695	21 316	57 616	147 264	211 921	25 784	75 740	198 787	169 478	1 277	9 875	924 248

**Notes:**

Fiscal year ending nearest to March 31.

Figures for 1974-75, 1985-86, 1986-87 and 1987-88 are estimates produced by the Environment Accounts and Statistics Division using projections of annual average growth rates of pollution abatement and control (PAC) expenditures. Therefore, these data are less reliable than data from other years.

A historical revision of PAC expenditure data was done from 1988-89 onward. Consequently, any comparison with previous years should be made with caution.

The sum of expenditures by province/territory may not be equal to the Canada total because some intergovernmental transfers may have been allocated to the Canada total and not to a particular province/territory.

1. Includes Nunavut.

**Sources:**

Statistics Canada, Environment Accounts and Statistics Division and Public Institutions Division.



Table B.5.9

## Local Government Expenditures on Sewage Collection and Disposal by Province and Territory, 1970-1998

Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T. <sup>1</sup>	Canada
thousand dollars													
1970	1 437	625	9 645	4 126	60 980	90 897	6 556	3 909	20 465	41 046	159	227	240 072
1971	8 128	272	10 571	4 151	32 441	128 679	11 516	6 662	25 532	41 998	145	660	270 755
1972	8 579	2 136	12 800	3 786	41 293	141 333	7 777	4 604	27 237	74 471	280	964	325 260
1973	4 250	5 088	17 443	7 134	98 469	154 214	8 142	3 833	27 429	92 050	176	629	418 857
1974	6 574	942	18 452	9 395	131 223	199 588	7 675	9 344	37 964	68 119	616	217	490 109
1975	9 769	4 214	19 578	20 197	162 053	230 662	11 127	10 170	33 648	65 632	1 460	973	569 483
1976	10 533	2 028	10 534	30 331	308 373	235 668	13 991	18 422	36 393	92 847	1 851	2 116	763 087
1977	7 566	1 034	17 606	23 183	304 030	238 484	14 164	19 364	62 669	97 905	1 764	4 377	792 146
1978	11 105	1 315	17 882	15 495	170 479	248 826	16 214	22 848	125 208	88 524	4 802	2 805	725 503
1979	16 208	3 493	29 052	15 160	158 466	274 477	17 079	32 885	136 119	84 404	1 085	3 939	772 367
1980	17 828	1 538	16 382	18 667	246 630	268 405	16 514	25 354	170 779	103 084	1 779	3 238	890 198
1981	17 574	1 901	24 836	17 801	246 162	314 148	34 598	31 393	135 518	137 891	876	3 237	965 935
1982	16 254	2 361	21 582	21 963	210 159	349 836	21 434	21 970	138 533	130 775	738	2 608	938 213
1983	17 043	2 255	21 228	28 696	189 403	367 161	26 110	27 161	178 817	132 882	759	5 009	996 524
1984	10 867	2 144	20 817	27 517	185 874	418 342	31 657	32 383	112 103	120 625	761	4 121	967 211
1985	15 094	2 452	20 937	27 668	222 890	424 585	29 807	32 116	113 244	96 645	938	6 499	992 875
1986	15 870	1 861	19 523	27 222	298 598	448 513	55 779	34 313	116 101	114 158	1 234	4 851	1 138 023
1987	19 216	1 797	25 389	31 212	287 120	476 460	39 115	35 169	130 956	152 517	1 078	8 573	1 208 602
1988	19 426	1 796	38 941	30 740	377 887	597 643	40 072	36 301	118 368	142 171	8 781	1 483	1 413 609
1989	19 028	1 945	31 176	30 702	531 371	723 837	49 106	41 358	138 229	154 934	1 061	12 009	1 734 756
1990	24 951	2 165	38 281	40 240	659 991	778 073	52 055	42 458	161 963	185 334	2 074	14 412	2 001 997
1991	19 420	2 580	63 118	42 898	537 628	838 006	55 495	37 362	146 430	192 799	4 216	14 320	1 954 272
1992	19 323	2 414	44 357	41 010	524 710	878 902	81 299	40 544	154 470	248 486	5 077	15 184	2 055 776
1993	22 968	1 595	58 426	37 815	433 867	819 534	56 100	40 516	186 345	269 756	5 481	18 111	1 950 514
1994	18 418	2 117	59 962	38 657	515 186	820 774	41 589	46 986	157 393	316 957	5 342	17 333	2 040 714
1995	20 582	3 440	64 923	42 700	698 439	855 781	56 105	54 624	164 758	424 268	15 061	18 993	2 419 674
1996 <sup>P</sup>	22 832	3 543	28 034	49 098	669 907	795 404	49 504	52 561	160 070	468 741	8 460	18 500	2 326 654
1997 <sup>e</sup>	17 827	2 419	34 002	36 606	582 022	919 301	49 732	39 845	190 923	463 622	7 237	15 917	2 359 453
1998 <sup>2</sup>	24 752	2 381	29 527	34 811	479 916	808 768	48 312	59 580	204 607	407 853	2 436	17 852	2 120 795

**Notes:**

A historical revision of local government PAC expenditure data was done from 1988 onward. Consequently, any comparison with previous years should be made with caution.

Year end closest to December 31.

Figures may not add up to totals due to rounding.

1. Includes Nunavut.

2. 1998 data are forecasts.

**Sources:**

Statistics Canada, Environment Accounts and Statistics Division and Public Institutions Division.



Table B.5.10

**Local Government Expenditures on Waste Collection and Disposal by Province and Territory, 1970-1998**

Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T. <sup>1</sup>	Canada
thousand dollars													
1970	588	25	2 095	928	20 619	30 494	4 871	6 194	8 185	6 920	274	79	81 272
1971	1 544	177	2 841	1 487	25 416	45 058	4 707	2 970	10 562	13 311	111	173	108 357
1972	1 571	199	3 402	3 187	28 794	46 238	5 105	5 335	10 788	12 722	151	215	117 707
1973	1 741	202	3 789	1 604	33 295	51 736	6 049	6 073	10 970	15 518	303	218	131 498
1974	2 346	269	4 762	2 490	45 819	61 427	7 690	6 459	17 658	20 177	406	248	169 751
1975	3 309	316	5 512	2 803	44 654	104 455	9 087	6 287	23 028	28 971	592	530	229 544
1976	3 913	373	5 664	2 853	65 060	99 083	10 934	7 072	18 649	30 743	254	546	245 144
1977	4 410	376	6 806	3 017	79 273	106 997	13 119	8 165	26 756	32 573	414	688	282 594
1978	4 781	376	14 830	4 226	86 034	121 800	13 029	9 993	27 506	31 935	472	800	315 782
1979	5 063	514	8 417	3 868	75 111	132 220	12 526	11 713	32 781	45 111	868	859	329 051
1980	5 817	362	9 049	4 491	87 050	157 826	13 396	11 977	49 646	49 517	622	1 141	390 894
1981	6 814	370	10 154	5 106	97 444	157 840	13 678	13 226	46 670	55 755	604	1 262	408 923
1982	8 020	467	11 262	5 394	119 689	177 098	16 145	13 668	47 435	55 505	593	1 365	456 641
1983	8 058	462	12 956	5 943	137 617	228 053	15 101	14 334	43 593	59 858	585	1 746	528 306
1984	10 095	532	14 101	5 807	132 197	213 274	17 294	14 755	43 272	60 328	595	2 192	514 442
1985	10 547	458	16 303	5 581	148 828	226 035	18 390	16 021	46 444	72 639	698	2 418	564 362
1986	12 110	549	17 372	6 514	143 005	267 841	19 445	16 066	47 835	93 584	799	2 633	627 753
1987	11 264	480	46 967	8 229	154 344	297 685	21 613	20 583	50 148	99 156	488	3 536	714 493
1988	10 576	497	21 941	9 824	178 308	391 866	24 526	17 841	53 813	103 199	4 063	625	817 079
1989	11 915	581	24 059	12 156	195 986	462 601	26 080	16 766	58 925	122 472	580	3 697	935 818
1990	12 044	612	31 928	13 305	223 016	584 145	25 682	17 595	66 592	146 467	640	3 879	1 125 905
1991	14 183	667	41 172	14 825	267 306	607 933	26 043	17 993	72 961	160 562	684	3 893	1 228 222
1992	11 252	979	33 369	15 749	337 915	592 040	29 303	18 499	79 526	174 362	930	3 431	1 297 355
1993	10 796	1 040	34 530	18 623	300 574	569 980	29 571	18 239	82 127	180 063	906	6 922	1 253 371
1994	10 879	1 216	46 113	19 064	330 711	564 240	31 065	18 452	84 288	181 511	939	4 586	1 293 064
1995	10 658	1 017	43 680	42 554	321 798	549 031	35 150	18 907	91 510	189 645	1 286	5 671	1 310 907
1996 <sup>P</sup>	9 112	1 068	59 511	44 990	314 443	543 224	43 473	21 692	90 998	197 131	1 112	5 371	1 332 125
1997 <sup>e</sup>	8 663	1 058	66 709	42 183	335 123	578 976	45 445	22 096	91 485	227 079	1 057	5 857	1 425 731
1998 <sup>2</sup>	10 067	924	90 402	44 187	333 174	596 674	47 771	23 539	127 214	245 576	1 289	5 896	1 526 713

**Notes:**

A historical revision of local government PAC expenditure data was done from 1988 onward. Consequently, any comparison with previous years should be made with caution.

Year end closest to December 31.

Figures may not add up to totals due to rounding.

1. Includes Nunavut.

2. 1998 data are forecasts.

**Sources:**

Statistics Canada, Environment Accounts and Statistics Division, Public Institutions Division and Cansim, matrix 8463 (series d473047).





Table B.5.11

**Local Government Expenditures on Other Pollution Control Activities and Other Environmental Services by Province and Territory, 1970-1998**

Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T. <sup>1</sup>	Canada
thousand dollars													
1970	1	15	27	-	1 799	1 526	58	6	116	116	-	-	3 664
1971	1 208	-	238	219	2 296	-	467	107	99	70	-	-	4 704
1972	10	-	61	3	2 605	637	127	209	1 086	137	2	-	4 877
1973	2	123	48	-	2 905	2 589	72	6	155	260	-	-	6 160
1974	52	112	152	-	2 615	4 311	267	49	2 021	1 187	-	6	10 772
1975	32	80	108	-	2 117	11 615	111	66	778	1 169	-	97	16 173
1976	12	288	84	-	4 467	12 151	302	393	2 729	1 294	23	116	21 859
1977	54	278	122	-	6 334	18 673	281	114	415	1 158	1	48	27 478
1978	32	616	415	-	6 740	35 409	317	188	443	1 718	6	37	45 921
1979	14	86	544	6	5 654	43 473	276	213	3 804	759	65	32	54 926
1980	5	22	155	17	7 616	41 907	539	253	5 145	1 980	2	94	57 735
1981	71	-	463	-	8 732	32 729	1 331	252	3 990	2 531	69	73	50 241
1982	-	-	112	63	10 819	24 849	265	313	4 004	2 672	-	53	43 150
1983	-	-	157	-	12 933	30 802	454	128	4 421	2 161	-	20	51 076
1984	11	-	170	-	13 600	26 973	480	128	148	1 903	-	32	43 445
1985	190	-	145	-	28 037	38 709	616	300	65	1 981	-	8	70 051
1986	5	-	200	-	33 978	39 960	471	58	163	2 058	-	16	76 909
1987	14	139	60	514	35 427	48 508	514	124	264	2 331	-	16	87 911
1988	14	151	107	404	32 988	37 769	676	193	273	2 614	-	11	75 200
1989	11	160	225	15	31 674	45 901	668	225	204	3 514	-	18	82 615
1990	6	176	286	1 854	32 024	43 182	733	274	-	3 695	-	101	82 331
1991	4	183	1 332	1 844	18 387	54 307	884	205	-	3 742	1	60	80 949
1992	4	193	276	1 325	15 262	78 532	919	341	-	5 624	26	108	102 610
1993	4	203	369	1 669	24 852	74 513	10 683	3 117	-	11 208	-	203	126 821
1994	3	241	554	2 271	33 384	78 643	10 373	3 288	1 749	12 969	3	712	144 190
1995	3	718	977	5 445	27 823	74 149	10 634	3 033	1 090	8 011	-	1 124	133 007
1996 <sup>P</sup>	3	675	516	2 084	29 621	71 977	11 493	3 332	747	8 350	-	293	129 091
1997 <sup>e</sup>	3	666	554	5 594	101 674	49 122	12 208	2 875	969	13 692	-	301	187 658
1998 <sup>2</sup>	3	707	464	5 645	128 761	115 403	13 041	3 142	1 150	9 944	-	305	278 565

**Notes:**

A historical revision of local government PAC expenditure data was done from 1988 onward. Consequently, any comparison with previous years should be made with caution.

Year end closest to December 31.

Figures may not add up to totals due to rounding.

1. Includes Nunavut.

2. 1998 data are forecasts.

**Sources:**

Statistics Canada, Environment Accounts and Statistics Division, Public Institutions Division and Cansim, matrix 8463 (series d473048).



Table B.5.12

**Total Local Government Expenditures on Pollution Abatement and Control by Province and Territory, 1970-1998**

Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T. <sup>1</sup>	Canada
thousand dollars													
1970	2 026	665	11 767	5 054	83 398	122 917	11 485	10 109	28 766	48 082	433	306	325 008
1971	10 880	449	13 650	5 857	60 153	173 737	16 690	9 739	36 193	55 379	256	833	383 816
1972	10 160	2 335	16 263	6 976	72 692	188 208	13 009	10 148	39 111	87 330	433	1 179	447 844
1973	5 993	5 413	21 280	8 738	134 669	208 539	14 263	9 912	38 554	107 828	479	847	556 515
1974	8 972	1 323	23 366	11 885	179 657	265 326	15 632	15 852	57 643	89 483	1 022	471	670 632
1975	13 110	4 610	25 198	23 000	208 824	346 732	20 325	16 523	57 454	95 772	2 052	1 600	815 200
1976	14 458	2 689	16 282	33 184	377 900	346 902	25 227	25 887	57 771	124 884	2 128	2 778	1 030 090
1977	12 030	1 688	24 534	26 200	389 637	364 154	27 564	27 643	89 840	131 636	2 179	5 113	1 102 218
1978	15 918	2 307	33 127	19 721	263 253	406 035	29 560	33 029	153 157	122 177	5 280	3 642	1 087 206
1979	21 285	4 093	38 013	19 034	239 231	450 170	29 881	44 811	172 704	130 274	2 018	4 830	1 156 344
1980	23 650	1 922	25 586	23 175	341 296	468 138	30 449	37 584	225 570	154 581	2 403	4 473	1 338 827
1981	24 459	2 271	35 453	22 907	352 338	504 717	49 607	44 871	186 178	196 177	1 549	4 572	1 425 099
1982	24 274	2 828	32 956	27 420	340 667	551 783	37 844	35 951	189 972	188 952	1 331	4 026	1 438 004
1983	25 101	2 717	34 341	34 639	339 953	626 016	41 665	41 623	226 831	194 901	1 344	6 775	1 575 906
1984	20 973	2 676	35 088	33 324	331 671	658 589	49 431	47 266	155 523	182 856	1 356	6 345	1 525 098
1985	25 831	2 910	37 385	33 249	399 755	689 329	48 813	48 437	159 753	171 265	1 636	8 925	1 627 288
1986	27 985	2 410	37 095	33 736	475 581	756 314	75 695	50 437	164 099	209 800	2 033	7 500	1 842 685
1987	30 494	2 416	72 416	39 955	476 891	822 653	61 242	55 876	181 368	254 004	1 566	12 125	2 011 006
1988	30 016	2 444	60 989	40 968	589 183	1 027 278	65 274	54 335	172 454	247 984	12 855	2 108	2 305 888
1989	30 954	2 686	55 460	42 873	759 031	1 232 339	75 854	58 349	197 358	280 920	1 641	15 724	2 753 189
1990	37 001	2 953	70 495	55 399	915 031	1 405 400	78 470	60 327	228 555	335 496	2 714	18 392	3 210 233
1991	33 607	3 430	105 622	59 567	823 321	1 500 246	82 422	55 560	219 391	357 103	4 901	18 273	3 263 443
1992	30 579	3 586	78 002	58 084	877 887	1 549 474	111 521	59 384	233 996	428 472	6 033	18 723	3 455 741
1993	33 768	2 838	93 325	58 107	759 293	1 464 027	96 354	61 872	268 472	461 027	6 387	25 236	3 330 706
1994	29 300	3 574	106 629	59 992	879 281	1 463 657	83 027	68 726	243 430	511 437	6 284	22 631	3 477 968
1995	31 243	5 175	109 580	90 699	1 048 060	1 478 961	101 889	76 564	257 358	621 924	16 347	25 788	3 863 588
1996 <sup>p</sup>	31 947	5 286	88 061	96 172	1 013 971	1 410 605	104 470	77 585	251 815	674 222	9 572	24 164	3 787 870
1997 <sup>e</sup>	26 493	4 143	101 265	84 383	1 018 819	1 547 399	107 385	64 816	283 377	704 393	8 294	22 075	3 972 842
1998 <sup>2</sup>	34 822	4 012	120 393	84 643	941 851	1 520 845	109 124	86 261	332 971	663 373	3 725	24 053	3 926 073

**Notes:**

A historical revision of local government PAC expenditure data was done from 1988 onward. Consequently, any comparison with previous years should be made with caution.

Year end closest to December 31.

Figures may not add up to totals due to rounding.

1. Includes Nunavut.

2. 1998 data are forecasts.

**Sources:**

Statistics Canada, Environment Accounts and Statistics Division and Public Institutions Division.



## Business sector

Table B.5.13

## Business Capital and Repairs Expenditures on Pollution Abatement and Control by Industry, 1985-1997

Industry	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
thousand dollars													
Forestry	x	-	-	72	x	x	740	x	x	2 965	4 025	11 696	5 534
Mining <sup>1</sup>	..	..	40 814	87 796	51 829	78 015	71 455	64 350	58 134	71 099	61 999	64 459	66 673
Crude Petroleum and Natural Gas <sup>1</sup>	...	...	...	...	...	...	...	...	...	139 252	228 770	183 557	107 578
Food and Beverage <sup>2</sup>	x	x	12 846	4 973	x	x	9 724	33 501	15 149	50 781	29 933	75 326	x
Wood <sup>3</sup>	..	..	..	..	..	..	..	..	..	..	..	..	74 306
Pulp and Paper <sup>4</sup>	31 204	35 671	37 759	95 394	171 625	489 810	400 052	278 539	281 795	608 304	809 730	633 337	323 047
Primary Metals	54 511	57 721	73 419	121 427	258 519	395 750	259 860	198 926	107 483	84 288	108 626	247 612	x
Fabricated Metal Products <sup>5</sup>	4 852	7 451	7 482	7 844	10 843	6 008	x	x	x	7 790	..	..	..
Transportation Equipment <sup>6</sup>	1 977	19 553	5 194	16 288	15 464	14 037	15 695	1 870	10 450	31 814	..	57 144	x
Non-Metallic Mineral Products	2 536	3 693	x	3 287	4 137	1 568	x	x	x	19 473	51 351	41 877	29 513
Refined Petroleum and Coal Products	1 236	x	3 028	3 201	x	12 699	17 935	16 423	22 955	105 666	95 624	89 581	104 629
Chemical Products	11 642	31 448	24 120	31 122	123 991	29 081	37 777	68 967	77 388	77 443	65 459	86 879	136 963
Other manufacturing industries <sup>7</sup>	3 139	10 830	7 004	9 340	20 843	26 817	26 329	23 153	14 301	28 067	301 905	118 842	78 615
Electric Power and Gas Distribution Systems; Other Utilities <sup>8</sup>	x	2 503	x	64 885	99 346	177 033	378 119	504 779	457 659	162 954	94 600	84 991	x
Other non-manufacturing industries <sup>9</sup>	19 499	18 301	8 350	41 119	9 463	9 846	15 172	49 372	26 627	60 013	45 297	115 350	..
<b>Total</b>	<b>140 565</b>	<b>193 010</b>	<b>224 155</b>	<b>486 748</b>	<b>784 327</b>	<b>1 265 934</b>	<b>1 240 105</b>	<b>1 245 258</b>	<b>1 080 827</b>	<b>1 449 909</b>	<b>1 897 319</b>	<b>1 810 651</b>	<b>1 545 819</b>

## Notes:

Figures may not add up to totals due to rounding.

Data from 1985 to 1993 are derived from the *Capital and Repairs Expenditures Survey*. Data since 1994 are derived from the *Survey of Environmental Protection Expenditures* except for "Other non-manufacturing industries" (and "Other manufacturing industries" in 1994). Consequently, any comparison between the two periods should be made with caution.

The following industries are excluded: Agriculture; Fishing and Trapping; Education Service; and Health and Social Services.

1. From 1987 to 1993, data for Mining industry and for Crude Petroleum and Natural Gas industry were combined.

2. Includes Tobacco Products industry since 1996.

3. Since 1997, the PAC estimate for Wood industry is available separately. Before 1997, this estimate was included in the "Other manufacturing industries" total.

4. Before 1994, data for Pulp and Paper industry may have included investment from other Paper and Allied Products industries.

5. Since 1995, the PAC estimate for Fabricated Metal Products industry has been included in the "Other manufacturing industries" total.

6. In 1995, the estimate for Transportation Equipment industry was included in the "Other manufacturing industries" total.

7. Data were derived from the *Capital and Repairs Expenditures Survey* before 1995.

8. Since 1995, these industries include Pipeline Transport industry.

9. Estimates were derived from the *Capital and Repairs Expenditures Survey*.

## Sources:

Statistics Canada, Environment Accounts and Statistics Division and Investment and Capital Stock Division.





Table B.5.14

**Business Capital and Repairs Expenditures on Pollution Abatement and Control by Province and Territory, 1985-1997**

Province/Territory	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994 <sup>1</sup>	1995	1996	1997 <sup>2</sup>
thousand dollars													
Newfoundland	x	2 628	9 266	x	x	20 242	x	x	x	..	46 318	43 887	x
Prince Edward Island	x	x	x	x	x	x	x	x	x	..	x	x	1 183
Nova Scotia	x	6 397	x	9 721	x	6 112	x	x	18 183	..	36 785	x	16 064
New Brunswick	1 935	3 288	11 825	25 333	13 105	9 408	x	78 417	31 085	95 570	118 580	82 762	39 603
Quebec	55 206	48 000	69 677	85 657	195 027	255 859	121 516	159 530	163 260	438 693	495 456	x	335 197
Ontario	59 421	106 981	84 809	226 230	386 824	501 272	678 566	577 388	481 893	488 883	578 388	471 973	576 414
Manitoba	x	1 677	3 072	14 183	10 703	x	5 566	12 298	18 209	..	58 286	24 507	28 768
Saskatchewan	353	1 556	3 487	5 865	8 161	x	24 219	x	x	..	46 583	40 782	62 900
Alberta	9 794	15 462	7 773	23 641	44 118	25 394	24 611	84 570	128 752	251 066	301 905	277 968	212 045
British Columbia	3 386	6 943	25 160	73 440	113 351	399 510	327 910	212 559	205 955	173 983	212 874	349 024	253 960
Yukon Territory and Northwest Territories <sup>3</sup>	x	x	x	16 093	x	9 311	x	x	x	..	x	x	x
<b>Canada</b>	<b>140 565</b>	<b>193 010</b>	<b>224 155</b>	<b>486 748</b>	<b>784 327</b>	<b>1 265 930</b>	<b>1 240 110</b>	<b>1 245 260</b>	<b>1 080 830</b>	<b>1 449 900</b>	<b>1 897 319</b>	<b>1 810 701</b>	<b>1 545 819</b>

**Notes:**

Figures may not add up to totals due to rounding.

Data from 1985 to 1993 are derived from the *Capital and Repairs Expenditures Survey*. Data since 1994 are derived from the *Survey of Environmental Protection Expenditures* except for "Other non-manufacturing industries" (and "Other manufacturing industries" in 1994). Consequently, any comparison between the two periods should be made with caution.

The following industries are excluded: Agriculture; Fishing and Trapping; Education Service; and Health and Social Services.

1. In 1994, figures for New Brunswick cover all the Atlantic provinces (Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick) while figures for Alberta cover all the Prairie provinces (Manitoba, Saskatchewan, Alberta), the Yukon Territory and the Northwest Territories (including Nunavut).

2. Figures for 1997 exclude estimates for the "Non-manufacturing industries" category. Consequently, any comparison with previous years should be made with caution.

3. Includes Nunavut.

**Sources:**

Statistics Canada, Environment Accounts and Statistics Division and Investment and Capital Stock Division.

Table B.5.15

**Business Capital Expenditures on Environmental Protection by Industry and Type of Activity, 1995 \***

Industry	Environmental		Reclamation and decommissioning	Wildlife and habitat protection	PAC end-of-pipe processes	PAC integrated processes	Total
	Environmental monitoring	assessments and audits					
	thousand dollars						
Logging	90	x	157	x	3 301	634	7 872
Mining	11 039	640	21 710	140	45 598	5 362	84 489
Crude Petroleum and Natural Gas	3 239	5 940	82 075	1 118	209 075	16 456	317 903
Food	2 378	x	813	x	13 051	7 766	24 358
Beverage	1 414	79	660	--	1 587	3 737	7 518
Pulp and Paper	11 251	2 219	6 561	3 804	670 024	128 455	822 314
Primary Metals	7 189	451	330	137	55 646	45 791	109 544
Non-Metallic Mineral Products	2 342	194	945	353	42 603	6 406	52 843
Refined Petroleum and Coal Products	16 133	534	321	-	67 066	12 425	96 479
Chemical Products	10 494	151	16 803	871	34 747	20 218	83 284
Other manufacturing industries <sup>1</sup>	..	..	..	..	..	..	307 973
Pipeline Transport and Gas Distribution Systems <sup>2</sup>	2 753	2 146	4 119	1 747	13 411	5 549	29 725
Electric Power Systems	9 399	x	10 422	x	47 409	16 079	146 000
Total excluding "Other manufacturing industries"	77 721	37 958	144 916	49 338	1 203 518	268 878	1 782 329
Total	..	..	..	..	..	..	2 090 302

**Notes:**

Figures may not add up to totals due to rounding.

Figures for 1995 are different from those published in *Econnections, Indicators and Detailed Statistics 1997* because they are revised estimates.

1. Includes all other manufacturing industries not already specified. The Transportation Equipment industry is included under "Other manufacturing industries" because of data quality constraints.

2. Includes Pipeline Transport industry and Gas Distribution Systems industry.

**Source:**

Statistics Canada, 1998, *Environmental Protection Expenditures in the Business Sector, 1995*, Catalogue No. 16F006XIE, Ottawa.



Table B.5.16

**Business Capital Expenditures on Environmental Protection by Industry and Type of Activity, 1996 \***

Industry	Environmental	Environmental	Reclamation and	Wildlife	PAC	PAC	Total
	monitoring	assessments and audits	decommissioning	and habitat protection	end-of-pipe processes	integrated processes	
	thousand dollars						
Logging	377	341	1 416	1 938	10 065	1 254	15 391
Mining	1 674	1 539	11 100	448	49 202	13 583	77 546
Crude Petroleum and Natural Gas	6 721	3 830	79 483	3 697	158 372	18 464	270 567
Food and Tobacco Products	1 749	x	126	x	37 358	29 073	68 813
Beverage	2 103	157	691	-	3 464	1 579	7 994
Pulp and Paper	16 944	2 367	13 681	1 394	297 417	318 976	650 779
Primary Metals	5 348	x	685	x	61 773	180 491	250 047
Transportation Equipment	806	209	3 304	721	25 334	31 004	61 378
Non-Metallic Mineral Products	2 040	x	1 282	x	33 581	6 256	43 490
Refined Petroleum and Coal Products	3 057	3 638	4 487	-	42 100	44 424	97 706
Chemical Products	24 613	368	6 508	101	45 095	17 171	93 856
Other manufacturing industries <sup>1</sup>	..	..	..	..	..	..	135 040
Pipeline Transport and Gas Distribution Systems <sup>2</sup>	837	2 818	7 398	2 313	20 627	11 624	45 617
Electric Power Systems	7 040	22 405	6 369	16 876	37 001	7 862	97 553
Total excluding "Other manufacturing industries"	73 309	40 127	136 530	27 621	821 389	681 761	1 780 737
Total	..	..	..	..	..	..	1 915 777

**Notes:**

Figures may not add up to totals due to rounding.

1. Includes all other manufacturing industries not already specified.

2. Includes Pipeline Transport industry and Gas Distribution Systems industry.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.

Table B.5.17

**Business Capital Expenditures on Environmental Protection by Industry and Type of Activity, 1997 \***

Industry	Expenditures on Environmental Protection by Industry and Type of Activity, 1991						Total
	Environmental	Environmental	Reclamation and	Wildlife	PAC	PAC	
	monitoring	assessments and audits	decommissioning	and habitat protection	end-of-pipe processes	integrated processes	
	thousand dollars						
Logging	—	587	750	771	885	4 629	7 642
Mining	2 274	5 207	7 689	846	31 014	33 385	80 415
Crude Petroleum and Natural Gas	7 694	8 726	63 417	3 232	59 179	40 705	182 953
Food and Tobacco Products	x	51	x	x	39 480	31 544	73 754
Beverage	824	130	753	-	3 365	1 409	6 481
Wood <sup>1</sup>	3 387	955	x	x	49 286	21 633	77 394
Pulp and Paper	6 180	1 913	3 542	3 015	180 039	136 828	331 517
Primary Metals	18 506	358	x	x	107 726	161 905	290 398
Transportation Equipment	802	198	x	x	24 840	93 246	121 223
Non-Metallic Mineral Products	269	687	1 890	-	19 798	9 446	32 090
Refined Petroleum and Coal Products	2 809	3 095	13 366	3 757	38 664	63 156	124 847
Chemical Products	7 381	5 261	9 412	832	64 540	65 042	152 468
Other manufacturing industries <sup>2</sup>	..	..	..	..	..	..	82 890
Pipeline Transport and Gas Distribution Systems <sup>3</sup>	603	6 241	5 039	1 307	14 090	43 295	70 575
Electric Power Systems	x	18 903	x	17 452	57 398	9 763	113 934
Total excluding "Other manufacturing industries"	60 914	52 312	113 826	32 349	690 304	715 986	1 665 691
Total	..	..	..	..	..	..	1 748 581

**Notes:**

The 1997 figures have been revised since the November 1999 preliminary release.

Figures may not add up to totals due to rounding.

1. Expenditures for Wood industry were included in "Other manufacturing industries" industries in 1995 and 1996. Wooden Box and Pallet industry and Coffin and Casket industry are excluded from estimates.

2. Includes all other manufacturing industries not already specified.

3. Includes Pipeline Transport industry and Gas Distribution Systems industry.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.



Table B.5.18

**Business Capital Expenditures on Environmental Protection by Province and Territory and Type of Activity, 1995 \***

Province/Territory	Environmental monitoring	Environmental assessments and audits	Reclamation and decommissioning	Wildlife and habitat protection	PAC end-of-pipe processes	PAC integrated processes	Total
thousand dollars							
Newfoundland	315	x	1 214	x	x	79	45 334
Prince Edward Island	x	x	x	x	143	x	197
Nova Scotia	4 261	238	441	397	26 740	2 317	34 394
New Brunswick	2 287	917	2 785	480	93 087	16 427	115 983
Quebec	23 477	x	11 999	x	335 064	71 066	492 672
Ontario	13 108	8 687	26 779	1 439	271 219	77 079	398 311
Manitoba	518	x	x	x	31 499	18 573	56 133
Saskatchewan	1 194	x	x	1 271	38 463	5 215	77 371
Alberta	14 453	6 537	5 751	3 941	233 783	36 967	353 200
British Columbia	17 821	3 168	10 132	4 710	129 569	40 948	206 348
Yukon Territory	x	x	x	x	x	x	x
Northwest Territories <sup>1</sup>	x	x	x	x	x	x	x
<b>Canada</b>	<b>77 721</b>	<b>37 958</b>	<b>144 916</b>	<b>49 338</b>	<b>1 203 518</b>	<b>268 878</b>	<b>1 782 329</b>

**Notes:**

Figures may not add up to totals due to rounding.

Figures exclude "Other manufacturing industries" not covered in the *Survey of Environmental Protection Expenditures*. For detailed information by industry, see table: Business Capital Expenditures on Environmental Protection by Industry and Type of Activity, 1995.

1. Includes Nunavut.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.

Table B.5.19

**Business Capital Expenditures on Environmental Protection by Province and Territory and Type of Activity, 1996 \***

Province/Territory	Environmental monitoring	Environmental assessments and audits	Reclamation and decommissioning	Wildlife and habitat protection	PAC end-of-pipe processes	PAC integrated processes	Total
thousand dollars							
Newfoundland	319	x	x	x	38 367	2 690	42 199
Prince Edward Island	x	x	x	x	x	x	2 370
Nova Scotia	x	181	2 536	x	23 013	4 757	31 747
New Brunswick	1 451	1 201	x	x	66 173	9 900	81 454
Quebec	x	17 346	23 182	x	148 319	238 688	461 155
Ontario	18 580	9 188	11 161	1 769	240 319	133 371	414 388
Manitoba	1 485	1 571	1 165	125	13 567	4 947	22 860
Saskatchewan	1 619	838	20 121	209	18 547	18 464	59 798
Alberta	20 537	7 191	68 779	8 145	199 483	43 040	347 175
British Columbia	4 646	2 200	6 132	4 470	70 325	225 121	312 894
Yukon Territory and Northwest Territories <sup>1</sup>	x	x	483	55	x	x	4 697
<b>Canada</b>	<b>73 309</b>	<b>40 127</b>	<b>136 530</b>	<b>27 621</b>	<b>821 389</b>	<b>681 761</b>	<b>1 780 737</b>

**Notes:**

Figures may not add up to totals due to rounding.

Figures exclude "Other manufacturing industries" not covered in the *Survey of Environmental Protection Expenditures*. For detailed information by industry, see table: Business Capital Expenditures on Environmental Protection by Industry and Type of Activity, 1996.

1. Includes Nunavut.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.





Table B.5.20

**Business Capital Expenditures on Environmental Protection by Province and Territory and Type of Activity, 1997 \***

Province/Territory	Environmental monitoring	Environmental assessments and audits	Reclamation and decommissioning	Wildlife and habitat protection	PAC end-of-pipe processes	PAC integrated processes	Total
thousand dollars							
Newfoundland	x	x	62	790	1 707	13 011	15 985
Prince Edward Island	x	x	—	x	x	626	1 209
Nova Scotia	410	183	1 736	276	7 754	6 327	16 686
New Brunswick	661	1 589	3 099	2 654	25 705	12 582	46 290
Quebec	20 809	18 036	x	x	160 551	130 488	353 651
Ontario	17 516	4 488	18 718	2 437	261 794	254 143	559 096
Manitoba	882	3 148	x	x	8 506	17 617	32 830
Saskatchewan	756	3 516	1 903	260	37 253	24 332	68 020
Alberta	13 549	16 224	69 493	4 752	102 091	91 655	297 764
British Columbia	5 903	4 672	8 757	4 486	82 744	162 404	268 966
Yukon Territory and Northwest Territories <sup>1</sup>	x	x	266	x	x	2 801	5 194
<b>Canada</b>	<b>60 914</b>	<b>52 312</b>	<b>113 826</b>	<b>32 349</b>	<b>690 304</b>	<b>715 986</b>	<b>1 665 691</b>

**Notes:**

Figures may not add up to totals due to rounding.

Figures exclude "Other manufacturing industries" not covered in the *Survey of Environmental Protection Expenditures*. For detailed information by industry, see table: Business Capital Expenditures on Environmental Protection by Industry and Type of Activity, 1997.

1. Includes Nunavut.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.

Table B.5.21

**Business Operating Expenditures on Environmental Protection by Industry and Type of Activity, 1995 \***

Industry	Environmental monitoring	Environmental assessments and audits	Reclamation and decommissioning	Wildlife and habitat protection	Waste management and sewerage services	PAC end-of-pipe processes	PAC integrated processes	Fees, fines and licenses	Other	Total
thousand dollars										
Logging	3 158	10 761	21 176	44 381	5 273	3 409	223	8 782	2 639	99 802
Mining	23 533	8 752	68 258	7 396	6 174	99 364	9 469	3 769	12 240	238 955
Crude Petroleum and Natural Gas	7 852	4 088	47 667	1 071	45 507	52 141	9 487	2 329	19 698	189 840
Food	7 621	3 158	2 042	481	41 565	19 709	2 305	3 407	2 020	82 308
Beverage	1 147	509	890	-	11 444	1 304	227	787	2 009	18 317
Pulp and Paper	68 939	7 495	7 969	6 148	27 659	117 375	31 336	12 338	23 279	302 538
Primary Metals	35 488	4 101	27 625	4 014	60 518	148 343	84 111	4 486	10 756	379 442
Non-Metallic Mineral Products	4 145	1 266	8 952	298	6 961	6 624	3 903	1 477	2 335	35 961
Refined Petroleum and Coal Products	4 448	553	34 713	x	7 710	50 252	x	x	3 831	102 144
Chemical Products	26 552	7 672	23 353	669	36 862	43 432	5 688	1 370	9 830	155 428
Other manufacturing industries <sup>1</sup>	..	..	..	..	176 290	..	..	..	..	466 600
Pipeline Transport and Gas Distribution Systems <sup>2</sup>	5 510	1 938	3 377	292	2 612	6 190	1 100	1 591	8 524	31 134
Electric Power Systems	8 746	19 295	25 670	x	9 818	35 170	x	x	79 755	283 649
<b>Total excluding "Other manufacturing industries"</b>	<b>197 139</b>	<b>69 588</b>	<b>271 692</b>	<b>88 509</b>	<b>262 103</b>	<b>583 313</b>	<b>210 110</b>	<b>60 148</b>	<b>176 916</b>	<b>1 919 518</b>
<b>Total</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>438 393</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>2 386 118</b>

**Notes:**

Figures may not add up to totals due to rounding.

Figures for 1995 are different from those published in *Econnections, Indicators and Detailed Statistics 1997* because they are revised estimates.

1. Includes all other manufacturing industries not already specified. The Transportation Equipment industry is included under "Other manufacturing industries" because of data quality constraints.

2. Includes Pipeline Transport industry and Gas Distribution Systems industry.

**Source:**

Statistics Canada, 1998, *Environmental Protection Expenditures in the Business Sector, 1995*, Catalogue No. 16F006XIE, Ottawa.



Table B.5.22

**Business Operating Expenditures on Environmental Protection by Industry and Type of Activity, 1996 \***

Industry	Environmental	Environmental	Reclamation	Wildlife	Waste	PAC	PAC	Fees,	Other	Total
	monitoring	assessments	and	and	management	end-of-pipe	integrated	and		
	and audits	decommissioning	habitat	and sewerage	processes	processes	licenses			
thousand dollars										
Logging	3 455	8 461	24 837	84 322	8 247	5 184	128	6 007	1 848	142 489
Mining	29 547	7 392	68 628	5 598	6 567	110 591	14 924	5 278	22 753	271 278
Crude Petroleum and Natural Gas	18 216	5 127	85 194	7 574	53 308	44 892	3 643	3 754	34 251	255 959
Food	9 274	2 660	4 866	1 527	46 746	23 184	3 133	4 772	4 550	100 712
Beverage	1 142	352	358	-	11 934	2 021	65	2 380	2 302	20 554
Pulp and Paper	92 119	12 614	7 562	18 046	37 767	199 043	31 779	9 565	21 288	429 783
Primary Metals	33 197	5 279	40 717	6 884	108 853	184 483	80 021	6 777	19 557	485 768
Transportation Equipment	5 219	2 054	4 696	95	67 573	31 944	3 736	799	9 680	125 796
Non-Metallic Mineral Products	4 236	1 489	5 287	55	7 512	6 786	336	2 526	3 255	31 482
Refined Petroleum and Coal Products	22 706	2 567	5 091	x	39 989	74 828	42 116	x	22 158	212 477
Chemical Products	37 470	9 139	38 328	x	44 730	57 560	x	x	15 435	216 473
Other manufacturing industries <sup>1</sup>	..	..	..	..	133 267	..	..	..	..	357 730
Pipeline Transport and Gas Distribution Systems <sup>2</sup>	1 414	2 647	5 677	x	2 406	9 040	-	x	12 645	35 682
Electric Power Systems	8 775	22 528	13 398	x	18 771	76 962	x	41 974	23 544	297 595
Total excluding "Other manufacturing industries"	266 770	82 309	304 639	142 714	454 403	826 518	265 756	89 673	193 266	2 626 048
Total	..	..	..	..	587 670	..	..	..	..	2 983 778

**Notes:**

Figures may not add up to totals due to rounding.

1. Includes all other manufacturing industries not already specified.

2. Includes Pipeline Transport industry and Gas Distribution Systems industry.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.



Table B.5.23

**Business Operating Expenditures on Environmental Protection by Industry and Type of Activity, 1997 \***

Industry	PAC end-of-pipe processes and waste management and sewerage services <sup>1</sup>								Fees, fines and licenses	Other	Total
	Environmental monitoring	Environmental assessments and audits	Reclamation and decommissioning	Wildlife and habitat protection	management and sewerage services <sup>1</sup>	PAC integrated processes					
	thousand dollars										
Logging	1 603	3 105	10 527	68 815	7 887	1 662	498	2 038	96 135		
Mining	20 411	7 523	54 899	3 191	122 350	39 018	4 143	20 020	271 555		
Crude Petroleum and Natural Gas	17 418	13 396	107 427	1 555	61 115	15 172	6 778	25 962	248 823		
Food and Tobacco Products	8 263	x	x	574	70 624	x	9 659	3 369	115 844		
Beverage	574	535	1 366	-	13 428	1 280	2 759	2 245	22 187		
Wood <sup>2</sup>	5 945	2 210	5 868	10 410	28 891	8 931	6 644	2 847	71 746		
Pulp and Paper	52 558	11 918	6 351	25 350	251 139	95 683	9 203	26 119	478 321		
Primary Metals	43 987	5 606	28 521	5 989	318 978	60 455	4 919	16 908	485 363		
Transportation Equipment	6 548	2 652	2 804	3 781	101 650	12 010	1 424	8 669	139 538		
Non-Metallic Mineral Products	1 770	3 199	6 163	-	17 560	5 538	1 414	3 412	39 056		
Refined Petroleum and Coal Products	7 328	3 808	32 799	485	111 210	65 983	178	13 500	235 291		
Chemical Products	31 854	7 029	30 561	1 319	104 741	34 086	2 162	15 128	226 880		
Other manufacturing industries <sup>3</sup>	..	..	..	..	..	..	..	..	291 232		
Pipeline Transport and Gas Distribution Systems <sup>4</sup>	1 443	2 628	4 955	336	13 439	2 899	890	8 255	34 845		
Electric Power Systems	6 441	x	x	25 599	70 199	x	30 247	28 727	240 320		
Total excluding "Other manufacturing industries"	206 143	80 998	298 231	147 404	1 293 211	421 800	80 918	177 199	2 705 904		
Total	..	..	..	..	..	..	..	..	2 997 136		

**Notes:**

The 1997 figures have been revised since the November 1999 preliminary release.

Figures may not add up to totals due to rounding.

1. Waste management and sewerage services are included with operating expenditures on PAC end-of-pipe processes in 1997 only.

2. Expenditures for Wood industry were included in "Other manufacturing industries" industries in 1995 and 1996. Wooden Box and Pallet industry and Coffin and Casket industry are excluded from estimates.

3. Includes all other manufacturing industries not already specified.

4. Includes Pipeline Transport industry and Gas Distribution Systems industry.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.





Table B.5.24

**Business Operating Expenditures on Environmental Protection by Province and Territory and Type of Activity, 1995 \***

Province/Territory	Waste management and sewerage services								Fees, fines and licences	Other	Total
	Environmental monitoring	Environmental assessments and audits	Reclamation and decommissioning	Wildlife and habitat protection	and sewerage services	PAC end-of-pipe processes	PAC integrated processes				
	thousand dollars										
Newfoundland	613	289	910	363	997	1 641	103	100	861	5 877	
Prince Edward Island	90	x	x	x	490	608	61	x	x	1 327	
Nova Scotia	2 048	490	3 505	2 000	1 681	5 479	160	693	3 010	19 066	
New Brunswick	6 988	1 268	3 902	3 154	7 005	26 002	2 034	1 118	3 589	55 080	
Quebec	72 550	14 409	48 038	17 073	60 914	109 989	34 454	18 579	30 434	406 440	
Ontario	55 930	28 454	76 188	9 343	96 694	217 191	121 706	9 867	78 847	694 220	
Manitoba	2 991	1 106	1 393	901	4 712	5 750	3 851	4 566	1 108	26 378	
Saskatchewan	7 210	1 485	28 138	1 163	21 220	50 549	7 832	1 389	5 592	124 578	
Alberta	25 292	11 028	73 750	4 853	47 344	86 375	11 793	4 294	33 064	297 793	
British Columbia	22 795	17 714	34 136	49 385	20 881	76 897	27 707	19 383	19 768	281 666	
Yukon Territory	x	x	x	x	x	x	x	x	x	x	
Northwest Territories <sup>1</sup>	x	x	x	x	x	x	x	x	x	x	
Canada	197 139	69 588	271 692	88 509	262 103	583 313	210 110	60 148	176 916	1 919 518	

**Notes:**

Figures may not add up to totals due to rounding.

Figures exclude "Other manufacturing industries" not covered in the *Survey of Environmental Protection Expenditures*. For detailed information by industry, see table: Business Operating Expenditures on Environmental Protection by Industry and Type of Activity, 1995.

1. Includes Nunavut.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.

Table B.5.25

**Business Operating Expenditures on Environmental Protection by Province and Territory and Type of Activity, 1996 \***

Province/Territory	Waste management and sewerage end-of-pipe integrated processes								Fees, fines and licences	Other	Total
	Environmental monitoring	Environmental assessments and audits	Reclamation and decommissioning	Wildlife and habitat protection	management and sewerage services	PAC end-of-pipe processes	PAC integrated processes				
	thousand dollars										
Newfoundland	1 786	375	901	x	2 271	5 542	x	981	1 399	15 327	
Prince Edward Island	147	77	163	x	592	485	..	x	76	1 845	
Nova Scotia	3 596	685	1 346	x	8 412	15 147	x	1 119	3 972	39 840	
New Brunswick	10 208	1 948	4 324	7 191	8 574	35 537	1 685	1 121	4 127	74 715	
Quebec	87 200	13 717	43 485	16 708	112 732	164 259	54 470	26 116	28 255	546 942	
Ontario	79 120	32 428	83 554	22 134	194 863	347 086	143 915	20 153	61 073	984 326	
Manitoba	5 219	1 442	6 033	1 392	6 530	15 629	2 452	4 349	7 566	50 612	
Saskatchewan	10 287	8 133	10 253	1 184	19 485	48 598	6 621	12 891	9 056	126 508	
Alberta	40 970	13 922	106 781	17 458	70 637	101 678	20 570	8 024	55 539	435 579	
British Columbia	27 414	9 392	46 085	72 852	29 429	88 350	30 634	14 648	21 331	340 135	
Yukon Territory and Northwest Territories <sup>1</sup>	823	190	1 714	x	878	4 207	x	x	872	10 219	
Canada	266 770	82 309	304 639	142 714	454 403	826 518	265 756	89 673	193 266	2 626 048	

**Notes:**

Figures may not add up to totals due to rounding.

Figures exclude "Other manufacturing industries" not covered in the *Survey of Environmental Protection Expenditures*. For detailed information by industry, see table: Business Operating Expenditures on Environmental Protection by Industry and Type of Activity, 1996.

1. Includes Nunavut.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.



Table B.5.26

**Business Operating Expenditures on Environmental Protection by Province and Territory and Type of Activity, 1997 \***

Province/Territory	Environmental monitoring	Environmental assessments and audits	Reclamation and decommissioning	Wildlife and habitat protection	PAC end-of-pipe waste management and sewerage services <sup>1</sup>	PAC integrated processes	Fees, fines and licences	Other	Total
	thousand dollars								
Newfoundland	1 432	286	601	928	7 644	6 808	195	1 130	19 024
Prince Edward Island	111	—	80	—	1 850	191	58	72	2 414
Nova Scotia	3 232	1 360	5 800	890	25 239	7 607	1 184	4 045	49 357
New Brunswick	6 173	1 240	4 009	5 353	35 781	12 819	1 356	3 770	70 501
Quebec	50 646	11 808	35 077	26 747	252 826	87 734	17 677	33 866	516 381
Ontario	56 569	26 355	69 749	30 003	579 210	162 758	18 402	57 039	1 000 085
Manitoba	5 805	1 473	5 419	2 903	26 612	23 521	7 015	4 135	76 883
Saskatchewan	8 843	4 373	12 288	1 054	55 367	16 130	12 398	6 816	117 269
Alberta	38 842	20 293	130 966	8 126	163 446	45 582	9 828	41 658	458 741
British Columbia	33 340	12 825	32 601	71 313	139 999	57 675	12 600	22 084	382 437
Yukon Territory and Northwest Territories <sup>2</sup>	1 150	948	1 641	72	5 237	975	205	2 584	12 812
<b>Canada</b>	<b>206 143</b>	<b>80 998</b>	<b>298 231</b>	<b>147 404</b>	<b>1 293 211</b>	<b>421 800</b>	<b>80 918</b>	<b>177 199</b>	<b>2 705 904</b>

**Notes:**

Figures may not add up to totals due to rounding.

Figures exclude "Other manufacturing industries" not covered in the *Survey of Environmental Protection Expenditures*. For detailed information by industry, see table: Business Operating Expenditures on Environmental Protection by Industry and Type of Activity, 1997.

1. Waste management and sewerage services are included with operating expenditures on PAC end-of-pipe processes in 1997 only.

2. Includes Nunavut.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.

Table B.5.27

**Business Capital Expenditures for Pollution Abatement and Control by Environmental Medium and by Industry, 1994-1997**

Industry	Air	Surface water	Soil and groundwater <sup>7</sup>	Noise, radiation and vibration	Total
	percent				
<b>1994<sup>1</sup></b>					
Logging	21.9	6.3	71.8	-	100.0
Mining	27.1	47.0	25.2	0.7	100.0
Crude Petroleum and Natural Gas; Refined Petroleum and Coal Products <sup>2</sup>	69.8	8.9	20.2	1.1	100.0
Food	18.0	73.1	7.6	1.4	100.0
Beverage	63.0	31.8	5.1	-	100.0
Pulp and Paper	11.7	80.2	8.0	0.1	100.0
Primary Metals	41.0	36.7	21.1	1.2	100.0
Fabricated Metal Products	35.8	43.6	20.0	0.6	100.0
Transportation Equipment <sup>3</sup>	52.5	18.7	27.8	1.0	100.0
Non-Metallic Mineral Products	74.0	14.0	11.8	0.2	100.0
Chemical Products	40.1	40.6	18.5	0.9	100.0
Electric Power and Gas Distribution Systems	37.8	7.4	40.9	13.9	100.0
<b>Total</b>	<b>32.9</b>	<b>47.4</b>	<b>17.4</b>	<b>2.3</b>	<b>100.0</b>



Table B.5.27

**Business Capital Expenditures for Pollution Abatement and Control by Environmental Medium and by Industry, 1994-1997 (continued)**

Industry	Air	Surface water	Soil and groundwater <sup>7</sup> percent	Noise, radiation and vibration	Total
<b>1995</b>					
Logging	43.1	8.8	46.1	2.0	100.0
Mining	17.3	47.0	35.2	0.5	100.0
Crude Petroleum and Natural Gas	84.4	10.6	4.9	0.1	100.0
Food	39.1	50.6	10.1	0.3	100.0
Beverage	10.6	78.7	8.7	2.0	100.0
Pulp and Paper	6.7	91.2	2.1	-	100.0
Primary Metals	47.9	36.3	14.0	1.8	100.0
Non-Metallic Mineral Products	67.8	3.2	28.9	0.2	100.0
Refined Petroleum and Coal Products	61.7	31.2	3.3	3.8	100.0
Chemical Products	38.8	37.2	23.2	0.8	100.0
Other manufacturing industries <sup>4</sup>	64.4	26.7	7.8	1.1	100.0
Pipeline Transport and Gas Distribution Systems <sup>5</sup>	42.9	16.5	36.2	4.4	100.0
Electric Power Systems	44.5	19.0	11.6	24.9	100.0
<b>Total</b>	<b>35.5</b>	<b>54.6</b>	<b>8.0</b>	<b>1.9</b>	<b>100.0</b>
<b>1996</b>					
Logging	13.5	10.1	76.4	-	100.0
Mining	16.0	62.9	20.8	0.4	100.0
Crude Petroleum and Natural Gas	91.0	2.1	6.5	0.4	100.0
Food and Tobacco Products	20.3	55.1	24.2	0.5	100.0
Beverage	31.2	52.0	16.1	0.8	100.0
Pulp and Paper	46.8	49.6	3.6	-	100.0
Primary Metals	66.2	27.7	5.5	0.6	100.0
Transportation Equipment	63.1	17.8	17.7	1.3	100.0
Non-Metallic Mineral Products	97.2	1.6	1.2	0.1	100.0
Refined Petroleum and Coal Products	43.8	24.6	31.7	-	100.0
Chemical Products	54.3	32.5	10.4	2.8	100.0
Other manufacturing industries	54.2	24.7	18.0	3.1	100.0
Pipeline Transport and Gas Distribution Systems <sup>5</sup>	59.5	6.6	26.5	7.3	100.0
Electric Power Systems	27.1	28.5	19.2	25.3	100.0
<b>Total</b>	<b>53.7</b>	<b>35.6</b>	<b>9.1</b>	<b>1.6</b>	<b>100.0</b>
<b>1997</b>					
Logging	7.1	23.2	69.4	0.2	100.0
Mining	33.1	41.1	25.6	0.2	100.0
Crude Petroleum and Natural Gas	51.1	19.2	25.1	4.7	100.0
Food and Tobacco Products	23.7	40.9	26.5	8.9	100.0
Beverage	8.0	15.8	73.4	2.8	100.0
Wood <sup>6</sup>	70.6	5.4	23.9	0.2	100.0
Pulp and Paper	51.0	32.5	16.2	0.2	100.0
Primary Metals	61.0	27.9	10.4	0.7	100.0
Transportation Equipment	63.1	12.4	24.2	0.2	100.0
Non-Metallic Mineral Products	72.3	8.8	18.8	-	100.0
Refined Petroleum and Coal Products	60.6	22.9	15.6	1.0	100.0
Chemical Products	36.3	46.0	16.2	1.6	100.0
Other manufacturing industries	58.4	24.9	15.2	1.5	100.0
Pipeline Transport and Gas Distribution Systems <sup>5</sup>	60.4	29.1	6.8	3.7	100.0
Electric Power Systems	34.6	23.2	19.2	23.1	100.0
<b>Total</b>	<b>51.9</b>	<b>28.6</b>	<b>16.9</b>	<b>2.7</b>	<b>100.0</b>

**Notes:**

This table is based on reported expenditures only.

1. In 1994, the industry coverage was more restrictive than in following years.

2. These two industries were combined for confidentiality of data.

3. Includes the following industries: Aircraft and Aircraft parts; Motor Vehicles; Motor Vehicle Parts and Accessories; and Truck, Bus Body and Trailer.

4. Includes the Transportation Equipment industry.

5. Includes Pipeline Transport industry and Gas Distribution Systems industry.

6. Expenditures for Wood industry were included in "Other manufacturing industries" in 1995 and 1996. Wooden Box and Pallet industry and Coffin and Casket industry are excluded from estimates.

7. In 1997, the "Soil and groundwater" category was changed to "On-site contained solid and liquid waste" to clarify coverage for that category. Therefore, comparisons with estimates from previous years should be made with caution.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.





Table B.5.28

**Business Capital Expenditures for Pollution Abatement and Control by Environmental Medium and by Region, Province and Territory, 1994-1997**

Region/Province/Territory	Air	Surface water	Soil and groundwater <sup>4</sup> percent	Noise, radiation and vibration	Total
<b>1994</b>					
Atlantic provinces <sup>1</sup>	27.2	56.7	13.0	3.1	100.0
Quebec	16.2	68.9	12.6	2.3	100.0
Ontario	31.2	45.1	20.9	2.8	100.0
Prairie provinces, <sup>2</sup> Yukon Territory and Northwest Territories <sup>3</sup>	64.0	16.0	18.1	1.9	100.0
British Columbia	36.3	42.6	21.0	0.1	100.0
<b>Canada</b>	<b>32.9</b>	<b>47.4</b>	<b>17.4</b>	<b>2.3</b>	<b>100.0</b>
<b>1995</b>					
Newfoundland	1.9	98.1	-	-	100.0
Prince Edward Island	24.3	45.0	30.6	-	100.0
Nova Scotia	9.0	86.1	4.6	0.3	100.0
New Brunswick	24.8	66.4	2.1	6.7	100.0
Quebec	23.3	70.9	4.9	1.0	100.0
Ontario	41.0	45.9	9.3	3.8	100.0
Manitoba	19.9	74.9	5.2	-	100.0
Saskatchewan	36.5	18.2	45.2	0.1	100.0
Alberta	71.9	19.4	8.0	0.7	100.0
British Columbia	16.8	73.1	9.9	0.2	100.0
Yukon Territory	x	x	x	x	...
Northwest Territories <sup>3</sup>	x	x	x	x	...
<b>Canada</b>	<b>35.5</b>	<b>54.6</b>	<b>8.0</b>	<b>1.9</b>	<b>100.0</b>
<b>1996</b>					
Newfoundland	x	x	x	x	...
Prince Edward Island	x	x	x	x	...
Nova Scotia	2.6	91.3	6.1	-	100.0
New Brunswick	42.7	47.5	9.7	-	100.0
Quebec	63.6	26.4	8.7	1.3	100.0
Ontario	54.6	29.7	11.8	3.9	100.0
Manitoba	26.0	66.7	6.0	1.3	100.0
Saskatchewan	32.4	52.3	14.4	0.8	100.0
Alberta	79.9	6.8	11.4	1.9	100.0
British Columbia	42.8	50.8	6.4	0.1	100.0
Yukon Territory and Northwest Territories <sup>3</sup>	7.2	86.4	6.3	0.1	100.0
<b>Canada</b>	<b>53.7</b>	<b>35.6</b>	<b>9.1</b>	<b>1.6</b>	<b>100.0</b>
<b>1997</b>					
Newfoundland	70.7	17.3	9.9	2.1	100.0
Prince Edward Island	x	x	x	x	100.0
Nova Scotia	28.8	27.2	43.6	0.4	100.0
New Brunswick	57.2	31.9	10.9	-	100.0
Quebec	58.5	16.4	23.7	1.4	100.0
Ontario	54.2	26.9	14.2	4.8	100.0
Manitoba	27.0	55.4	15.0	2.5	100.0
Saskatchewan	67.4	12.2	19.0	1.4	100.0
Alberta	54.3	21.3	21.7	2.7	100.0
British Columbia	35.1	52.9	11.5	0.5	100.0
Yukon Territory and Northwest Territories <sup>3</sup>	x	x	x	x	100.0
<b>Canada</b>	<b>51.9</b>	<b>28.6</b>	<b>16.9</b>	<b>2.7</b>	<b>100.0</b>

**Notes:**

This table is based on reported expenditures only.

1. The Atlantic provinces include Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick.

2. The Prairie provinces include Manitoba, Saskatchewan and Alberta.

3. Includes Nunavut.

4. In 1997, the "Soil and groundwater" category was changed to "On-site contained solid and liquid waste" to clarify coverage for that category. Therefore, comparisons with estimates from previous years should be made with caution.

**Source:**

Statistics Canada, Environment Accounts and Statistics Division.





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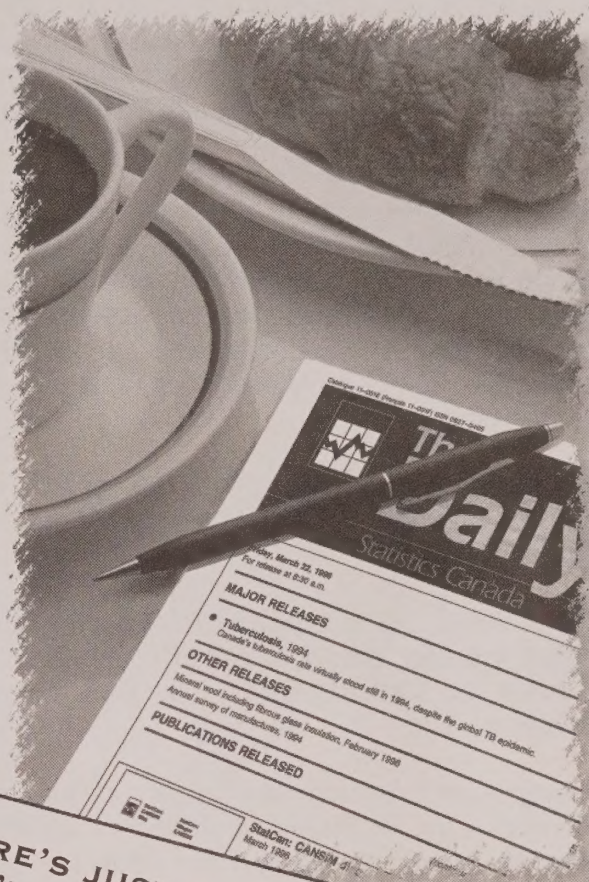
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## Windows™:

1. For Windows™ 95, 98, NT 4.0: Select **Start**, then **Run**.
2. Type **x:\install**, where **x** is your compact disc drive letter, then choose **OK**.
3. Go to step 4 below.

## MAC:

1. Double click either **MacinstE.exe** or **MacinstF.exe** to install application.
2. Click **Continue** button as splash screen comes up.
3. Go to Step 4 below.
4. Follow the instruction procedure on the screen.
5. A folder / program group called **Statistics\_Statistique Canada** will be created.  
An Econnections 2000 shortcut / icon will be copied in this folder.
6. Double click the **Econ2000** icon to run the application.  
(NOTE: Make sure the Econnections CD is in your CD-ROM drive while using the product.)

**This item is accompanied by a  
CD-ROM.**

**The contents of the CD-ROM are available  
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**Please check the University of Toronto  
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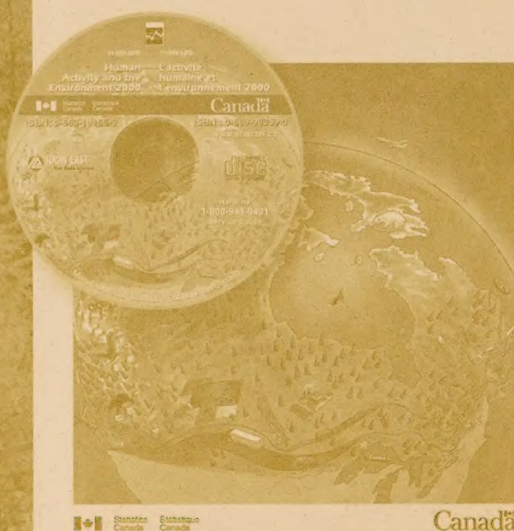


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